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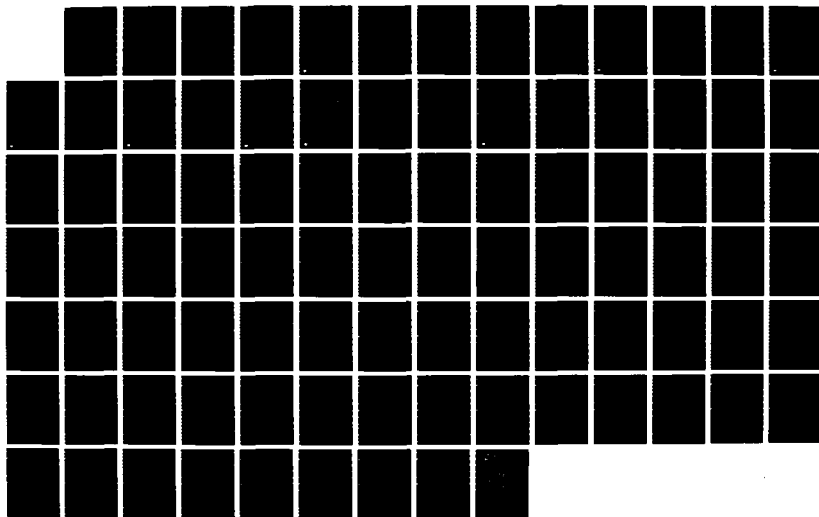
MUSSEL SURVEY LOCKS 12 15 16 17 AND 19 MISSISSIPPI(U)
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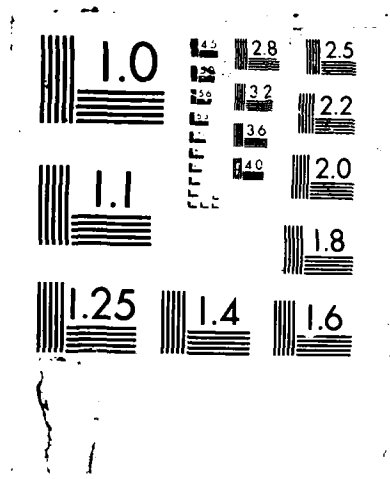
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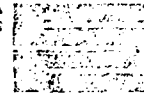


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MUSSEL SURVEY

LOCKS 12, 15, 16, 17 & 19

MISSISSIPPI RIVER

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INTERNATIONAL CONSULTANTS IN
ENGINEERING, ARCHITECTURE, PLANNING, AND MANAGEMENT

STANLEY CONSULTANTS
1000 P STREET, N.W.
WASHINGTON, D.C. 20004
(202) 331-1100

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MUSSEL SURVEY
LOCKS 12, 15, 16, 17 & 19
MISSISSIPPI RIVER

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Prepared by
Stanley Consultants, Inc.
November, 1987

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MUSSEL SURVEY
LOCKS 12, 15, 16, 17 & 19
Mississippi River

Summary

→ A qualitative mussel survey was performed in the Mississippi River upstream of Locks 12, 15, 16, 17 and 19 between August 19 and September 19, 1987 to determine the presence or absence of mussels at each of the five locations.

The area surveyed at each site was directly upstream of the primary lock chamber. The survey area extended from the upstream end of the landward lock wall for a distance of 2,000 feet upstream and was bounded by the bank on one side and by a line, 20 feet riverward of the outside lock wall on the other.

All survey work was performed by divers using a surface air supply and umbilical cord.

Significant concentrations of mussels were found only near Locks 15 and 17. Only scattered individuals were encountered at the remaining three sites. All individuals recovered were identified, recorded and returned to the river. Where beds were encountered, their limits were defined and located, and density measurements performed. No endangered, threatened or rare species were found.

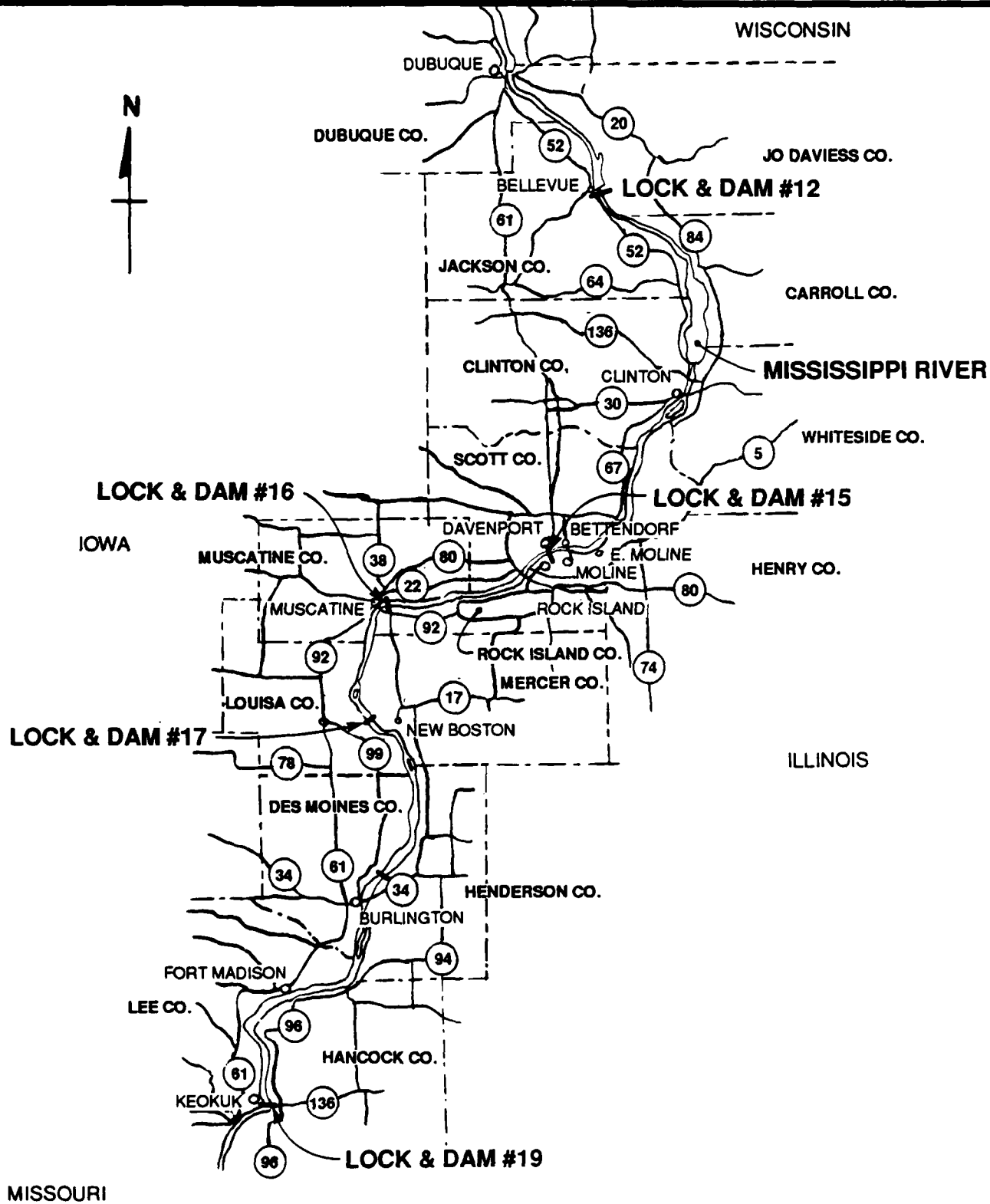
Substrates encountered included bedrock, scattered rocks, riprap, gravel, fine and coarse sand, and silt. *Key words: population survey*

Introduction

The Rock Island District, Corps of Engineers is proposing to construct extensions of the upper guidewalls at Locks 11 to 22 and lower guidewall extensions at Locks 21 and 22. Coordination with the US Fish and Wildlife Service and State conservation agencies resulted in a plan to survey only the construction sites identified in this report (upper guidewalls at Locks 12, 15, 16, 17 and 19). The remaining construction sites were considered to have little potential for harboring significant concentrations of mussels.

The upper guidewall extensions proposed are 600 feet in length at Locks 12, 15, 16, and 17 and 800 feet in length at Lock 19.

The location of each of the five locks is shown on Figure 1.



PROJECT AREAS

Figure 1



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Crew/Equipment

The crew included four individuals as follows:

1. A biologist/malacologist directing the study as principal investigator.
2. A principal or lead diver.
3. A standby/safety diver.
4. A diving tender (tending the diver's umbilical cord).

The diving vessel was an 18 foot, extra-wide "Jon" boat with extra flotation and a 75 hp outboard motor. In addition to standard safety equipment, the vessel was equipped with a licensed marine band radio.

The working diver wore a wet suit with 35-60 lbs of weight depending on depths and currents. The safety diver wore a wet suit at all times when the lead diver was down. A SAS (Surface Air Supply) system with a Kirby-Morgan "Superlite 17B" "hard hat" was employed. The helmet was equipped with communication equipment connected by cable to a transmitter/receiver in the boat so continuous two-way voice communication could be maintained between the diver and the biologist. The air supply was a 3,600 psi/360 foot³ compressed air tank and the umbilical cord was a 200 foot trio with air hose, communication cable and safety rope. The surface air supply provided capacity for a total of 6 hours of bottom time.

A 1/4 square meter quadrat frame was used for density measurements. Depths were measured using a hand-held sonar. Distances were measured with a range finder and by scaling from site drawings. The umbilical line also had marks at calibrated intervals.

Methods

At each anchorage, the diver descended at the boat and swam a "route" directed from the surface at the end of a 200 foot umbilical line. No strong currents were encountered at most survey locations, enabling the diver to swim easily in any direction. The diver moved slowly in a slight "zig-zag" pattern and swept the bottom with his hands. The diver can search a 6 foot wide band effectively. When mussels were encountered, the diver spent a few minutes searching that area more thoroughly. Recovered mussels were placed in a mesh bag buckled to the diver. The diver reported substrate conditions and estimated mussel densities continuously. When significant concentrations of mussels were encountered, the sampling frame was lowered to the diver on a

shackle. All shells, living and dead, were collected from within the frame and placed in the collecting bag. The diver's course was maintained by following his surfacing air bubbles and issuing directions over the communication system.

At most anchorages, the diver swam in a "loop" pattern, returned to the boat and the boat moved and reanchored. Where currents were slack, this "loop" is only constrained by the length of the umbilical line. In stronger currents, the loop is "compressed" because of the difficulty of swimming perpendicular to the current. The loop pattern also requires modification in rocky substrate because swimming cross-current hooks the umbilical line on the rocks.

"Drift" diving is employed in rocky substrates, fast current and deeper water. When drift diving, the diver swims along the bottom to the end of the umbilical line, finds a resting spot with an object to "hang on to," and the boat allowed to drift to the diver and reanchored. Drift diving is employed in deeper water to avoid the exertion and physical discomfort associated with ascent, descent and boarding. Drift diving is much less exhaustive and is an effective "search" technique.

Where visibility exists, the diver swims diagonally to the current to prevent the silt, suspended by his activities, from impeding visibility. This diagonal search technique results in a "zig-zag" pattern between anchorages and provides more comprehensive coverage.

Results

General - The field survey forms showing the results of each dive are included in the Appendix. These forms show the location and configuration of each dive, water depth, visibility, current, substrate, mussel recoveries, and notes on various other features encountered by the divers.

The surveyed areas, showing each dive, are shown on individual figures for each of the five sites. Mussel recoveries are tabulated on individual tables for each site.

Visibility - Visibility was relatively good at all sites except Lock 12 where recent rains had impacted water quality. At depths of less than about 7 feet, surface light provided 2-3 feet of visibility even without a helmet lamp. Below 7 feet, little or no visibility exists without the use of a helmet lamp. Visibility in deeper water, with a light, ranged from 6 inches

at Lock 12 to 3 feet at Locks 15 and 19. The divers "feel" the substrate for mussels whether visibility exists or not, so mussel recoveries don't increase with visibility but the diver can move faster if he can see several feet. Concern for collisions with bottom structures slows the diver where visibility is poor or nonexistent.

Substrate - Substrate varied dramatically from site to site and within each site. In some areas substrates changed as many as five times on one dive. On any dive, small pockets or seams of unique or different substrates might be encountered within larger areas of a relatively consistent substrate type. Of necessity, the following summary is a generalization of substrate types. More specific data can be found on the field survey forms.

Lock 12 - The substrate at Lock 12 consists of 1/4 inch to 1 inch of silt over sand and gravel with scattered large rocks from the Iowa shore out 175 feet. Beyond approximately 175 feet from shore, the substrate changes to a sand and gravel mix with a few larger scattered rocks.

Lock 15 - In the bay, which begins 1,750 feet upstream of the lock wall, the substrate is smooth solid bedrock beginning at 150-200 feet from shore. Close to shore the bottom consists of a silt and sand mixture. From near shore out 150 to 200 feet, the substrate is 1 inch to 3 inches of silt, loose small rock and scattered riprap over bedrock.

Where the sailing line runs very close to the Illinois bank, the substrate is exclusively riprap.

Beginning 300± feet above the end of the lock wall and extending several hundred feet upstream, the substrate is fine sand and silt with scattered gravel and loose rock.

Closer to the lock wall, the substrate is fine sand in line with the wall and toward Iowa, but changes to all silt toward the Illinois shore.

Lock 16 - Near shore in the upper end of the study area, the bottom consists of mixed sand and silt with scattered areas of riprap. The substrate gradually changes to 1 inch of silt over sand farther from shore.

Small areas of riprap were found near shore, 800 feet upstream of the wall, and 140 feet from shore, 1,200 feet upstream of the wall.

Within 150 feet of the wall the substrate is pure sand. Between 150 feet and 300 feet of the end of the wall, the bottom is all silt.

Lock 17 - In the bay beginning 1,200 feet upstream of the lock wall, the substrate changes from silt within 30 feet of shore to silt over riprap to 100 feet from shore. The next 20-25 feet is a steep riprap bank with a narrow seam of silt at its foot. Beyond 130± feet from shore, the substrate is all fine sand with small depressions of gravel.

From 200 feet to 1,200 feet of the end of the lock wall, the bottom is all riprap within 40 feet of shore.

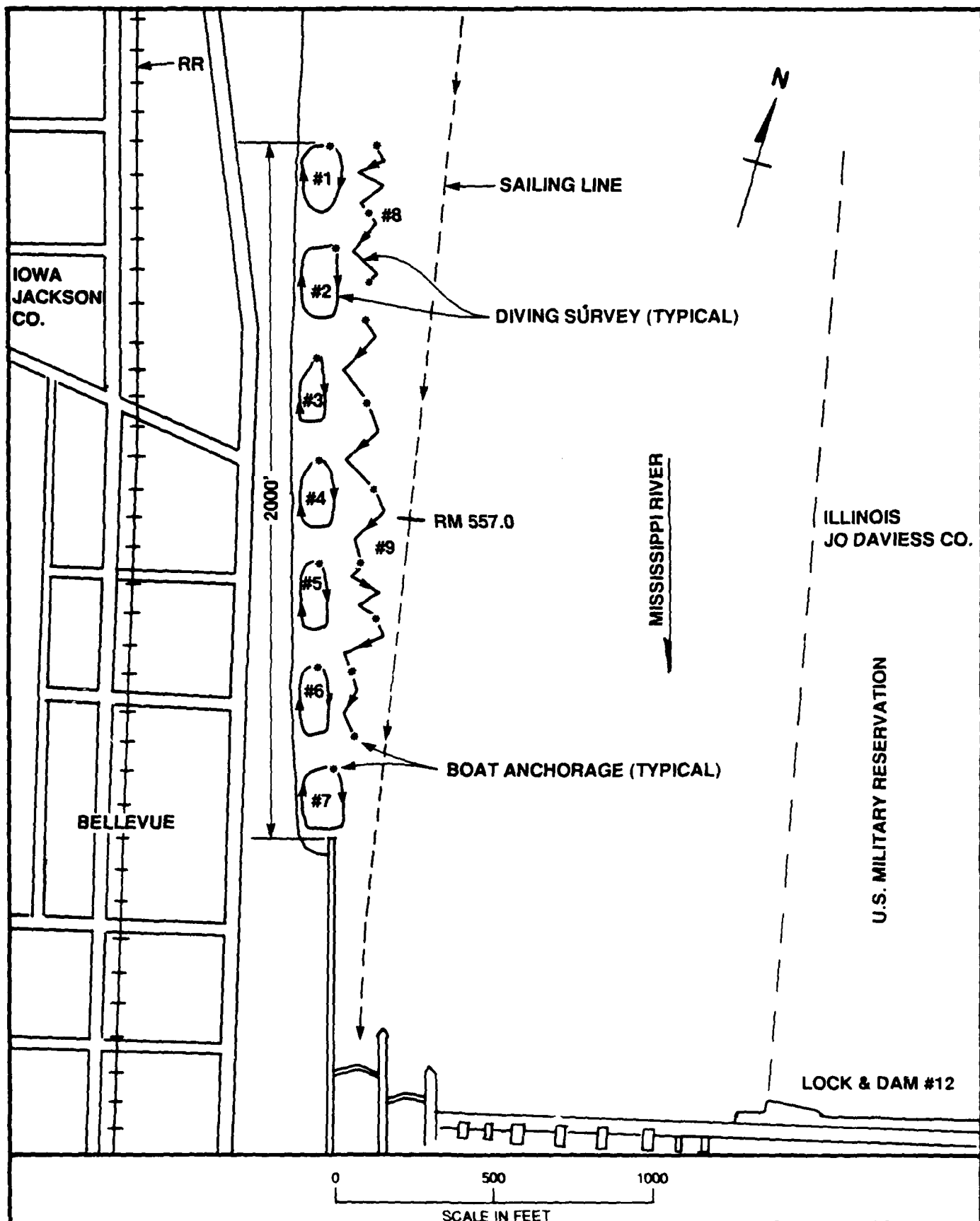
Within 200 feet of the lock wall near the sheet pile wall, the substrate is coarse sand and scattered riprap.

Lock 19 - Between 700 feet and 1,750 feet upstream of the lock wall, the bottom is primarily riprap extending approximately 40 feet from shore. All other areas are either exclusively silt or silt with a few scattered rocks. Every shallow depression within the study area contained scattered old shells. In some pockets the divers could scoop up handfuls of old fingernail clam shells.

Between 1,100 feet and 1,750 feet upstream of the lock wall and anywhere from 70-280 feet from shore the divers found large old timber and concrete structures which made diving somewhat hazardous. The structures are apparently the remnants of an old lock chamber. Very large rock was found scattered among these structures.

Mussel recoveries - Mussel beds were found at Locks 15 and 17. Only a few scattered recoveries were made at Locks 12, 16 and 19. A set of five random density samples were taken on both mussel beds. All individuals collected from these density samples were measured and recorded on the field survey forms. The size measurements should be considered incidental information only. To adequately address the issue of recruitment, all substrate within the sampling frame should be collected and sifted for juveniles. The range of sizes does, however, indicate a relatively healthy population in both beds.

Lock 12 - The location and configuration of each dive made at Lock 12 is shown on Figure 2. Mussel recoveries are summarized on Table 1. Fifty-one (51) individuals representing 11 species were collected. All are relatively common species and were found sparsely scattered within the study area.



MUSSEL SURVEY
LOCK & DAM #12

TABLE 1
MUSSEL SURVEY
Lock & Dam 12
Diving Results

<u>Species</u>	<u>Dive No.</u>									<u>Total</u>
	<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>	<u>6</u>	<u>7</u>	<u>8</u>	<u>9</u>	
Three Ridge (<u>Amblema plicata</u>)	-	-	-	-	-	-	1	1	-	2
Washboard (<u>Megalonaias nervosa</u>)	-	-	-	-	-	-	1	-	3	4
Mapleleaf (<u>Quadrula quadrula</u>)	-	-	-	-	-	-	1	-	-	1
Floater (<u>Anodonta grandis</u>)	-	-	-	-	2	1	1	1	1	6
Pocketbook (<u>Lampsilis ventricosa</u>)	-	-	-	-	-	-	-	3	1	4
Fragile Paper Shell (<u>Leptodea fragilis</u>)	-	-	1	-	-	-	1	2	1	5
Pink Paper Shell (<u>L. laevis</u>)	1	-	-	-	-	-	-	1	-	2
Black Sand Shell (<u>Ligumia recta</u>)	-	-	-	1	-	-	-	5	2	8
Threehorn Warty Back (<u>Obliquaria reflexa</u>)	-	-	-	-	-	-	-	1	-	1
Pink Heel Splitter (<u>Proptera alata</u>)	-	-	-	1	3	2	2	4	4	16
Deer Toe (<u>Truncilla truncata</u>)	-	-	-	-	-	-	-	2	-	2
No. of Individuals	1	0	1	2	5	3	7	20	12	51
No. of Species	1	0	1	2	2	2	6	9	6	11

Lock 15 - A narrow, sharply-defined mussel bed was found in the recessed bay 1,750 feet upstream of the end of the lock wall. Very few mussels were collected remote from the defined bed. Figure 3 shows the study area and the dives made at this lock. An enlargement of the bay area, showing the dives made and the limits of the bed, is shown on Figure 4. Recoveries are summarized in Table 2. Eighteen (18) species and 269 individuals were collected from this bed. The five density samples taken show densities ranging from 84 to 152 individuals per square meter with an average density of 112. Based on its moderately high diversity and size ranges within species, the bed appears relatively healthy. No endangered, threatened or rare species were collected. Pig toe (Fusconaia flava) and hickory nut (Obovaria olivaria) are conspicuous in their absence.

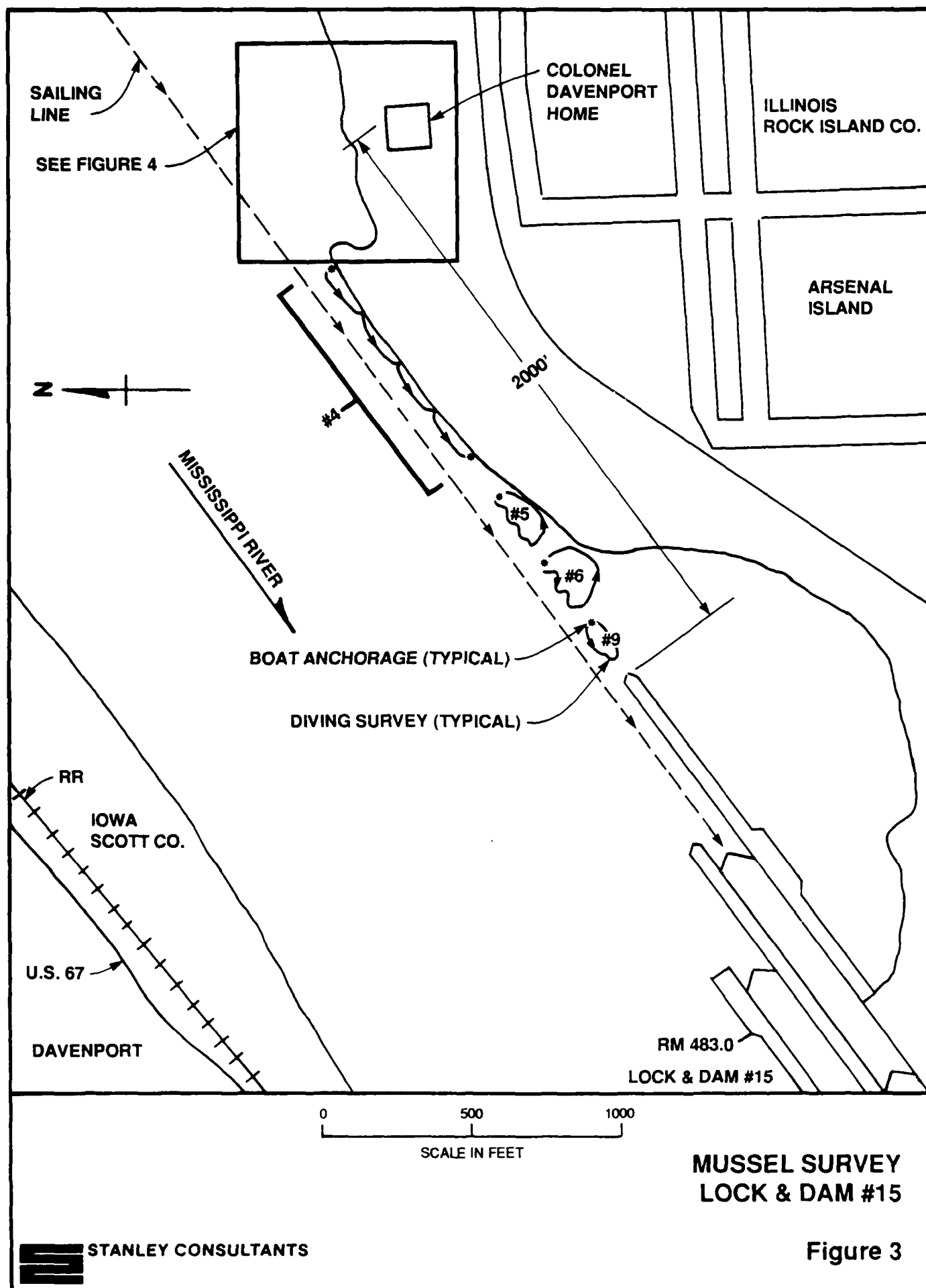
The bed is approximately 40 feet wide with an abrupt, sharply defined perimeter. No attempt was made to find the upstream limit of the bed outside of the study area. A one-foot wide collection transect was made perpendicularly through the bed on Dive #12. Larger, heavier species and individuals were found in the "heart" of the bed with smaller species and individuals on the perimeter, as is usual.

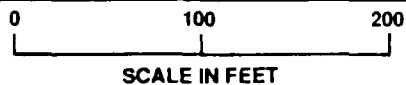
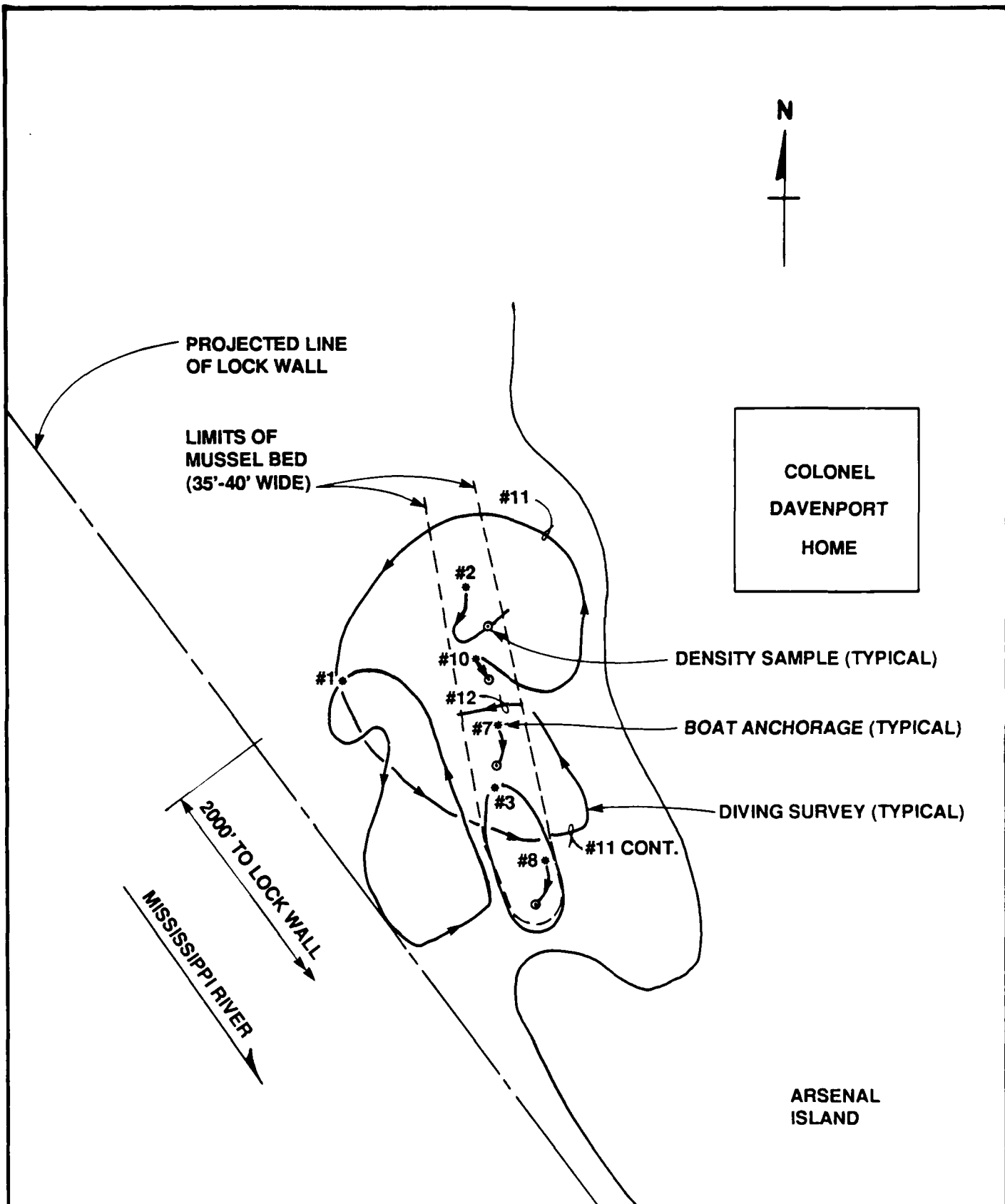
Lock 16 - Figure 5 and Table 3 show and summarize the collecting effort made at Lock 16. A total of 18 individuals representing 7 species were collected at this site. All were common species and found widely scattered.

Lock 17 - As at Lock 15, the recessed bay well upstream of the lock chamber harbored a very narrow, sharply-defined mussel bed. No mussels were collected between the lock and the bay area. Figure 6 shows the study area and the diving effort. Recoveries are summarized in Table 4.

A total of 326 individuals representing 20 species were found in the bed. The bed is 15-18 feet wide and lays at the foot of a riprap slope as shown on Figure 7. All species are relatively common with the exception of monkeyface (Quadrula metanevra) and mucket (Actinonaias carinata), both of which are appearing with less regularity in recent survey efforts. Black sand shell (Ligumia recta) was conspicuously absent. Five density samples yielded densities ranging from 72-212 individuals per square meter with an average of 126.

The bed is very healthy, extremely narrow and has an abrupt, well-defined perimeter. The divers could find no evidence that the bed is in immediate





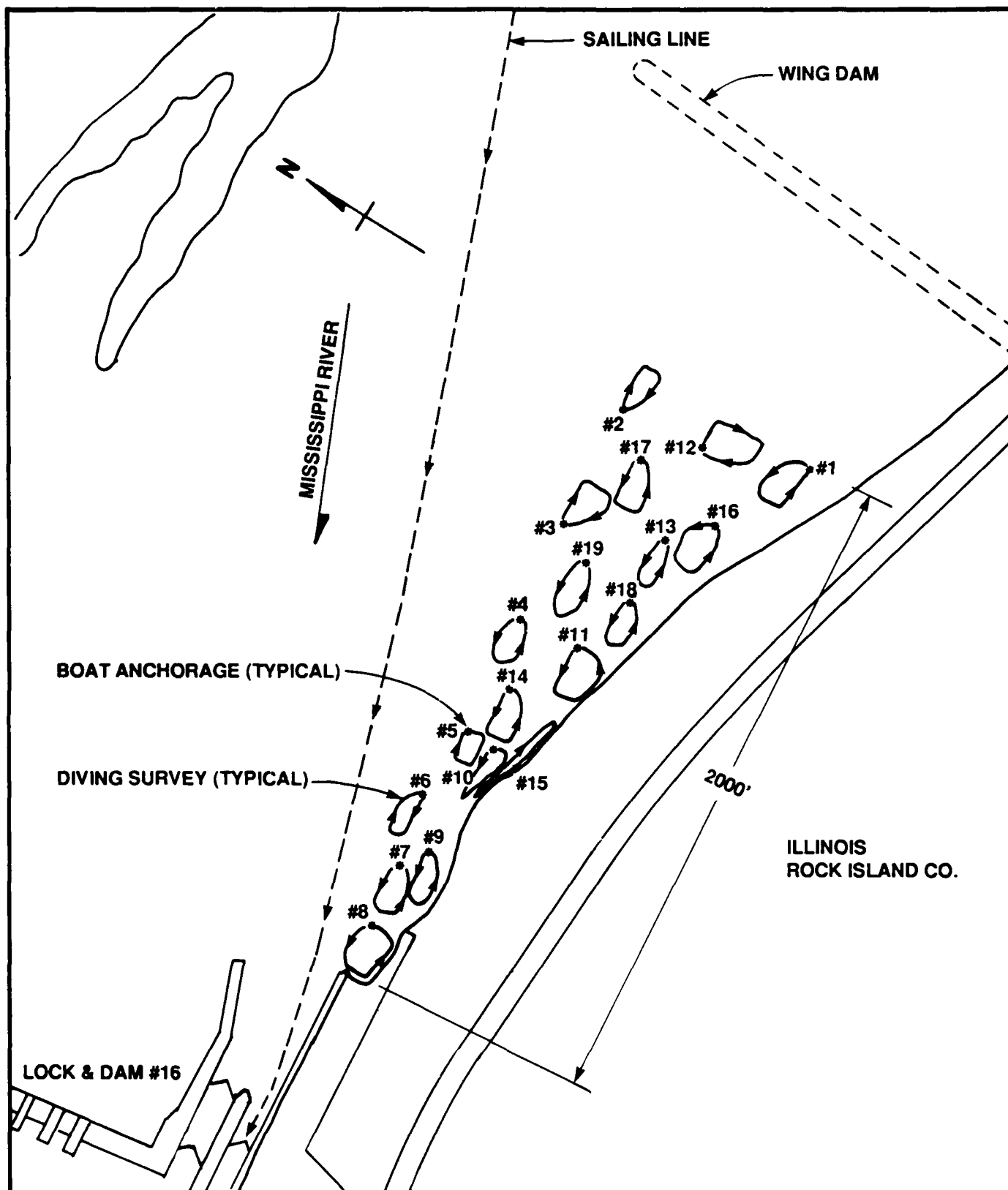
MUSSEL SURVEY
LOCK & DAM #15

TABLE 2
MUSSEL SURVEY
Lock & Dam 15

	Dive No.													
Species	1	2*	2a	3*	4	5	6	7*	8*	9	10*	11#	12	Total
Three Ridge (<u>Amblema plicata</u>)	-	1	5	6	-	-	-	4	7	-	1	-	19	43
Washboard (<u>Megalonaias nervosa</u>)	-	6	9	7	-	-	-	3	-	-	2	-	13	40
Monkeyface (<u>Quadrula metanevra</u>)	-	-	-	-	-	-	-	-	1	-	-	-	-	1
Wartyback (<u>Q. nodulata</u>)	-	-	-	1	-	-	-	-	2	-	-	-	2	5
Pimpleback (<u>Q. pustulosa</u>)	1	-	3	7	-	-	-	2	10	-	5	-	7	35
Mapleleaf (<u>Q. quadrula</u>)	-	1	2	1	-	-	-	3	1	-	1	-	3	12
Floater (<u>Anodonta grandis</u>)	1	1	-	1	-	-	-	-	-	-	-	-	4	7
Paper Pond Shell (<u>A. imbecillus</u>)	-	-	-	-	-	-	-	-	-	-	-	-	1	1
Squaw Foot (<u>Strophitus undulatus</u>)	-	-	-	-	-	-	-	-	-	-	-	-	1	1
Pocketbook (<u>Lampsilis ventricosa</u>)	-	-	2	-	-	-	-	-	1	-	-	-	-	3
Fragile Paper Shell (<u>Leptodea fragilis</u>)	-	3	7	1	-	-	-	4	4	-	2	-	17	38
Pink Paper Shell (<u>L. laevis</u>)	-	-	-	-	-	-	-	-	1	-	1	-	-	2
Black Sand Shell (<u>Ligumia recta</u>)	1	-	-	-	-	-	-	-	-	-	-	-	-	1
Threehorn Warty Back (<u>Obliquaria reflexa</u>)	-	3	-	3	-	-	-	-	2	-	2	-	4	14
Butterfly (<u>Plagiola lineolata</u>)	-	-	2	-	-	-	-	-	2	-	-	-	-	4
Pink Heel Splitter (<u>Proptera alata</u>)	1	1	6	1	-	-	-	2	1	-	1	-	6	19
Fawn's Foot (<u>Truncilla donaciformis</u>)	-	1	-	-	-	-	-	-	-	-	-	-	2	3
Deer Toe (<u>T. truncata</u>)	-	4	3	8	-	-	-	3	6	-	9	-	7	40
No. of Individuals	4	21	39	36	0	0	0	21	38	0	24	0	86	269
No. of Species	4	9	9	10	0	0	0	7	12	0	9	0	13	18

*Density Sample - Total No./1/4m²

#No collection



0 500 1000
SCALE IN FEET

MUSSEL SURVEY
LOCK & DAM #16



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Figure 5

TABLE 3
MUSSEL SURVEY
Lock & Dam 16
Diving Results

Species	Dive No.																			Total
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	
Three Ridge (<u>Amblema plicata</u>)	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	1
Washboard (<u>Megalonaias nervosa</u>)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	1
Paper Pond Shell (<u>Anodonta imbecillus</u>)	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	1
Fragile Paper Shell (<u>Leptodea fragilis</u>)	-	-	-	-	-	1	-	1	-	1	-	1	-	-	-	-	-	-	-	4
Pink Paper Shell (<u>L. laevisissima</u>)	-	-	-	-	-	1	-	-	-	-	-	-	-	1	-	-	-	-	-	2
Pink Heel Splitter (<u>Proptera alata</u>)	1	-	-	-	-	-	2	-	-	3	-	1	-	1	-	-	-	-	-	8
Deer Toe (<u>Truncilla truncata</u>)	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	1
No. of Individuals	1	0	0	0	0	4	2	1	0	5	0	2	0	2	1	0	0	0	0	18
No. of Species	1	0	0	0	0	4	1	1	0	3	0	2	0	2	1	0	0	0	0	7

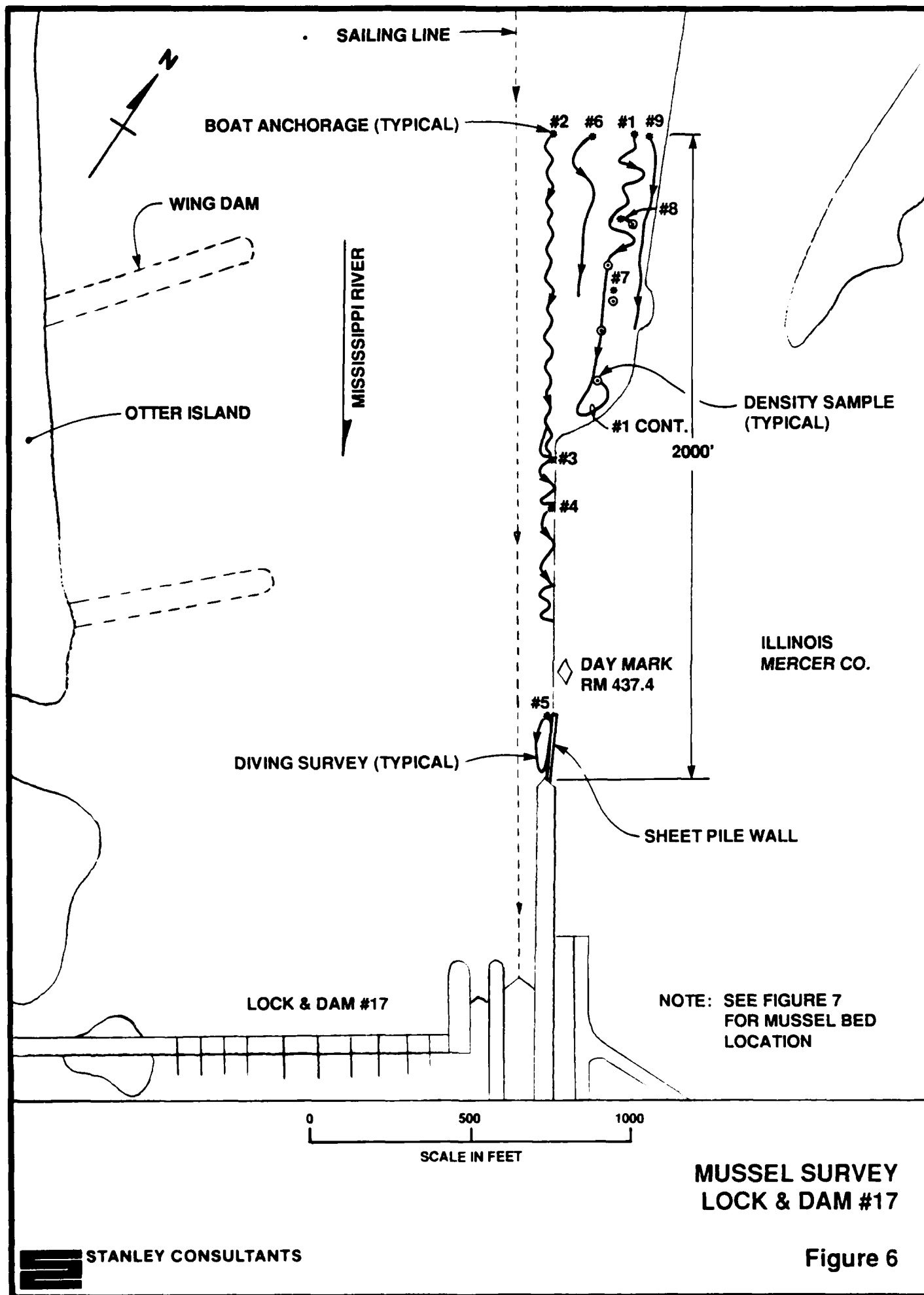


TABLE 4
MUSSEL SURVEY
Lock & Dam 17
Diving Results

Species	Dive No.													Total
	1a	1b	1c*	1d*	1e*	2	3	4	5	6	7*	8*	9	
Three Ridge (<u>Amblema plicata</u>)	6	5	3	4	1	-	-	-	-	-	1	1	2	23
Pig Toe (<u>Fusconaia flava</u>)	-	2	-	1	-	-	-	-	-	-	-	-	-	3
Washboard (<u>Megalonaias nervosa</u>)	-	4	-	-	-	-	-	-	-	-	2	1	-	7
Monkeyface (<u>Quadrula metanevra</u>)	1	-	-	-	-	-	-	-	-	-	-	-	-	1
Wartyback (<u>Q. nodulata</u>)	2	-	-	-	-	-	-	-	-	-	2	-	-	4
Pimpleback (<u>Q. pustulosa</u>)	15	2	4	8	4	-	-	-	-	-	10	2	-	45
Mapleleaf (<u>Q. quadrula</u>)	4	5	3	2	-	-	-	-	-	-	4	1	-	19
Floater (<u>Anodonta grandis</u>)	1	1	1	-	-	-	-	-	-	-	-	-	15	18
Paper Pond Shell (<u>A. imbecillus</u>)	-	-	-	-	-	-	-	-	-	-	-	1	-	1
Rock Pocketbook (<u>Arcidens confragosus</u>)	-	-	-	-	-	-	-	-	-	-	1	-	1	2
Mucket (<u>Actinonaias carinata</u>)	-	-	-	-	-	-	-	-	-	-	-	1	-	1
Pocketbook (<u>Lampsilis ventricosa</u>)	4	-	1	-	-	-	-	-	-	1	-	-	-	6
Fragile Paper Shell (<u>Leptodea fragilis</u>)	6	7	-	1	-	1	-	-	-	1	10	6	10	42
Pink Paper Shell (<u>L. laevissima</u>)	1	2	1	-	-	1	-	-	-	2	2	-	1	10
Threehorn Warty Back (<u>Obliquaria reflexa</u>)	1	2	2	3	-	1	-	-	-	-	-	-	1	10
Hickory Nut (<u>Obovaria olivaria</u>)	17	1	6	-	1	1	-	-	-	-	-	2	-	28
Butterfly (<u>Plagiola lineolata</u>)	-	3	-	1	-	-	-	-	-	-	1	1	-	6
Pink Heel Splitter (<u>Proptera alata</u>)	1	1	-	-	-	1	-	-	-	-	-	2	13	18
Fawn's Foot (<u>Truncilla donaciformis</u>)	1	1	-	1	1	-	-	-	-	-	3	1	-	8
Deer Toe (<u>T. truncata</u>)	11	8	7	8	11	-	-	-	-	-	17	11	1	74
No. of Individuals	71	44	28	29	18	5	0	0	0	4	53	30	44	326
No. of Species	14	14	9	9	5	5	0	0	0	3	11	12	8	20

*Density Sample - Total No./1/4m²

jeopardy from encroachment by fine sand on its riverward border, although it would appear logical that this phenomena has reduced the bed's width in the recent past.

No attempt was made to define the upstream limit of the bed. A bed is known to exist approximately one mile upstream and on the same general alignment with this bed. The bed near the lock is either an extension or a remnant of the one upstream.

Lock 19 - Figure 8 and Table 5 show and summarize the collecting effort made at Lock 19. A total of 38 individuals and 8 species were collected. All are common and were found widely scattered within the study area. Thirty-one (31) of the individuals collected (82%) represent two genera characteristic of slow current and silt substrate (Anodonta and Leptodea).

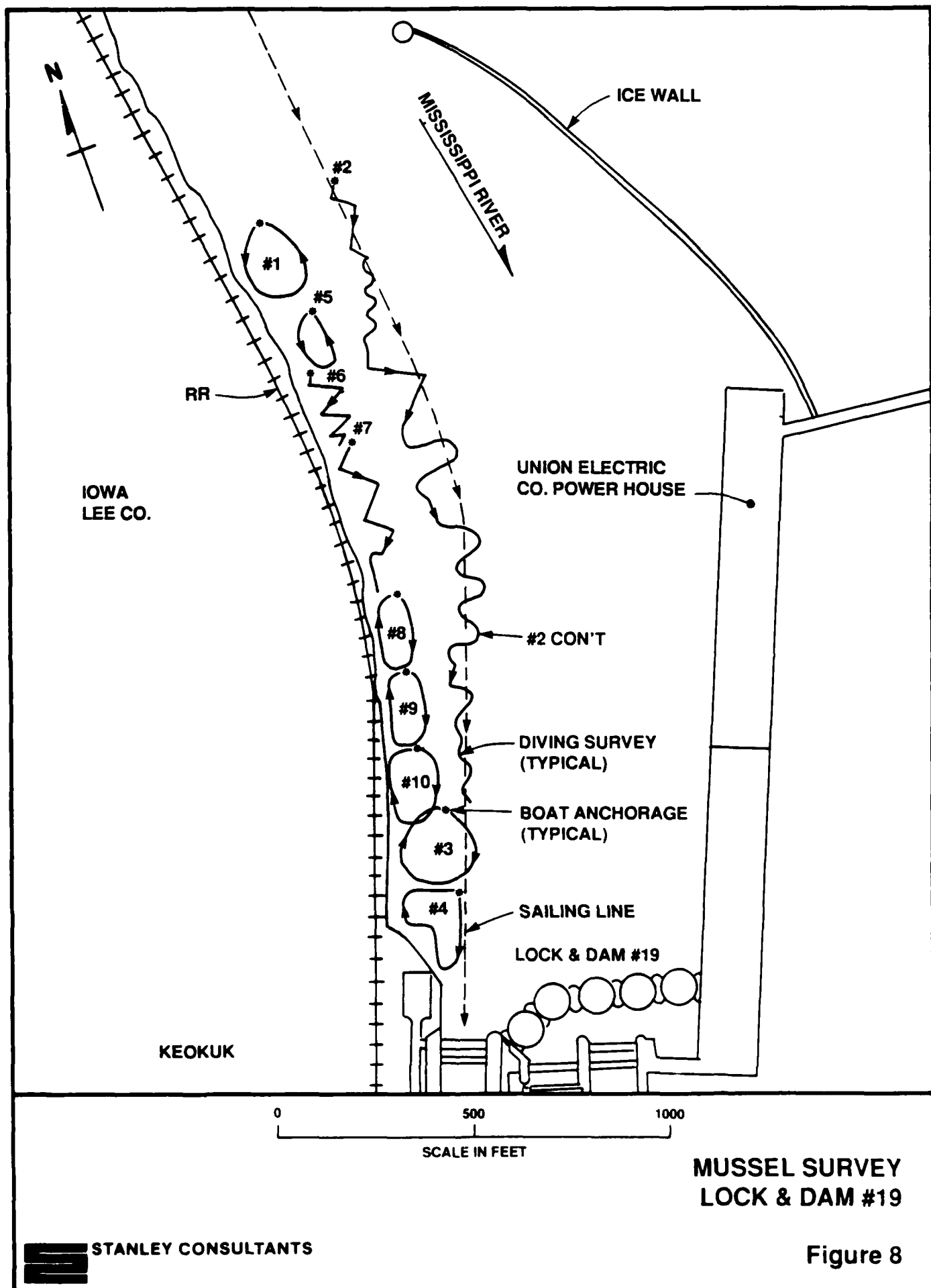


Figure 8

TABLE 5
MUSSEL SURVEY
Lock & Dam 19
Diving Results

Species	Dive No.										Total
	1	2	3	4	5	6	7	8	9	10	
Three Ridge (<u>Amblema plicata</u>)	1	1	-	-	-	-	-	-	-	-	2
Washboard (<u>Megalonaias nervosa</u>)	-	1	-	-	-	-	-	-	-	-	1
Mapleleaf (<u>Quadrula quadrula</u>)			-	1	-	-	-	-	-	-	-
Floater (<u>Anodonta grandis</u>)	1	2	4	-	-	-	2	-	2	4	15
Paper Pond Shell (<u>A. imbecillus</u>)	-	1	-	-	-	-	-	-	-	3	4
Fragile Paper Shell (<u>Leptodea fragilis</u>)	1	3	-	3	-	-	-	1	-	2	10
Pink Paper Shell (<u>L. laevis</u>)	-	1	-	-	-	-	-	1	-	-	2
Pink Heel Splitter (<u>Proptera alata</u>)	-	2	-	-	-	-	1	-	-	-	3
No. of Individuals	2	12	4	3	0	0	3	2	2	9	38
No. of Species	3	8	1	1	0	0	2	2	1	3	8

Date: 1-17-87

Mussel Survey
Lock 12

Sample Type Dive #1

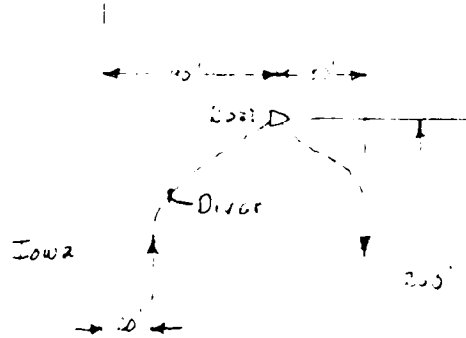
Sample Location 2000' above wall; 90' from shore
14' deep

Species

Three Ridge (Amblema plicata)
Ebony Shell (Fusconaia ebenus)
Pig Toe (F. flava)
Washboard (Megalonaias nervosa)
Bullhead (Plethobasus cyphus)
Monkeyface (Quadrula metanevra)
Warty Back (Q. nodulata)
Pimple Back (Q. pustulosa)
Maple Leaf (Q. quadrula)
Floater (Anodonta grandis)
Paper Pond Shell (Anodonta imbecillus)
Rock Pocketbook (Arcidens confragosus)
W. Heel Splitter (Lasmigona complanata)
Squaw Foot (Strophitus undulatus)
Mucket (Actinonaias carinata)
Pocketbook (Lampsilis ventricosa)
Fat Mucket (L. radiata siliquoidea)
Yellow Sandshell (L. teres)
Higgin's Eye (L. Higginsi)
Fragile Paper Shell (Leptodea fragilis)
Pink Paper Shell (L. laevissima) / small
Black Sand Shell (Ligumia recta)
3-Horned Warty Back (Obliquaria reflexa)
Hickory Nut (Obovaria olivaria)
Butterfly (Plagiola lineolata)
Pink Heel Splitter (Proptera alata)
Fawn's Foot (Truncilla donaciformis)
Deer Toe (T. truncata)
Spectacle-case (Cumberlandia monodonta)
Pleurobema sp.
Fat Pocketbook (Proptera cavax)
Liliput (Toxolasma parvus)

Comments:

Moderate current
Mud over sand substrate with some gravel
Numerous scatter of old shells
Water very light
Soft mud over the gravel near shore



Date: 7-17-87

Mussel Survey
Lock 12

Sample Type Dive #2 Sample Location 1700' above wall; 120' from shore
17' deep

Species

Three Ridge (Amblema plicata)
Ebony Shell (Fusconaia eburnus)
Pig Toe (F. flava)
Washboard (Megalonaias nervosa)
Bullhead (Plethobasus cyphus)
Monkeyface (Quadrula metanevra)
Warty Back (Q. nodulata)
Pimple Back (Q. pustulosa)
Maple Leaf (Q. quadrula)
Floater (Anodonta grandis)
Paper Pond Shell (Anodonta imbecillus)
Rock Pocketbook (Arcidens confragosus)
W. Heel Splitter (Lasmigona complanata)
Squaw Foot (Strophitus undulatus)
Mucket (Actinonaias carinata)
Pocketbook (Lampsilis ventricosa)
Fat Mucket (L. radiata siliquoidea)
Yellow Sandshell (L. teres)
Higgin's Eye (L. Higginsi)
Fragile Paper Shell (Leptodea fragilis)
Pink Paper Shell (L. laevissima)
Black Sand Shell (Ligumia recta)
3-Horned Warty Back (Obliquaria reflexa)
Hickory Nut (Obovaria olivaria)
Butterfly (Plagiola lineolata)
Pink Heel Splitter (Proptera alata)
Fawn's Foot (Truncilla donaciformis)
Deer Toe (T. truncata)
Spectacle-case (Cumberlandia monodonta)
Pleurobema sp.
Fat Pocketbook (Proptera capax)
Liliput (Toxolasma parvus)

Nothing

Comments:

1/2" of mud over sand & gravel

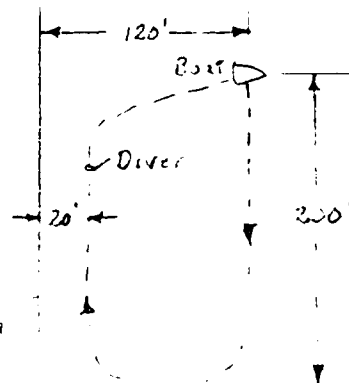
Scattered large rocks - some huge (boat size)
most rocks are 6"-18" diameter

Light current

6"-1' visibility w/ light

Scattered old shells

Near shore - 1" of mud over hard-packed sand & gravel Iowa



Date: 9-17-87

Mussel Survey
Lock 12

Sample Type Dive #3

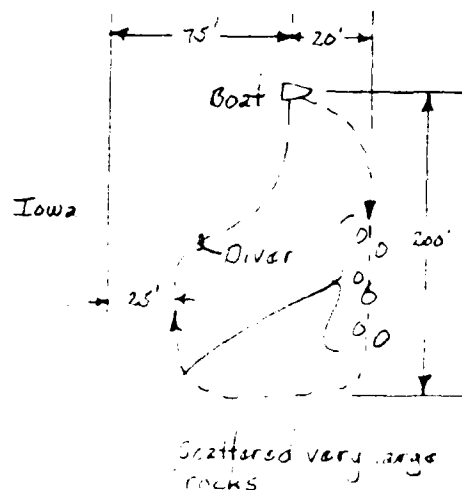
Sample Location 1400' concrete wall; 75' from shore
9' deep

Species

Three Ridge (Amblema plicata)
Ebony Shell (Fusconaia ebenus)
Pig Toe (F. flava)
Washboard (Megalonaias nervosa)
Bullhead (Plethobasus cyphus)
Monkeyface (Quadrula metanevra)
Warty Back (Q. nodulata)
Pimple Back (Q. pustulosa)
Maple Leaf (Q. quadrula)
Floater (Anodonta grandis)
Paper Pond Shell (Anodonta imbecillus)
Rock Pocketbook (Arcidens confragosus)
W. Heel Splitter (Lasmigona complanata)
Squaw Foot (Strophitus undulatus)
Mucket (Actinonaias carinata)
Pocketbook (Lampsilis ventricosa)
Fat Mucket (L. radiata siliquoidea)
Yellow Sandshell (L. teres)
Higgin's Eye (L. Higginsi)
Fragile Paper Shell (Leptodea fragilis) 1 Juv.
Pink Paper Shell (L. laevisissima)
Black Sand Shell (Ligumia recta)
3-Horned Warty Back (Obliquaria reflexa)
Hickory Nut (Obovaria olivaria)
Butterfly (Plagiola lineolata)
Pink Heel Splitter (Proptera alata)
Fawn's Foot (Truncilla donaciformis)
Deer Toe (T. truncata)
Spectacle-case (Cumberlandia monodonta)
Pleurobema sp.
Fat Pocketbook (Proptera capax)
Liliput (Toxolasma parvus)

Comments:

sand & gravel mixed
slight current
6"-1' visibility
few scattered rocks - 4"-6" dia.
more mud @ 75' down
than sand & gravel again



Date: 9-17-87

Mussel Survey
Lock 12

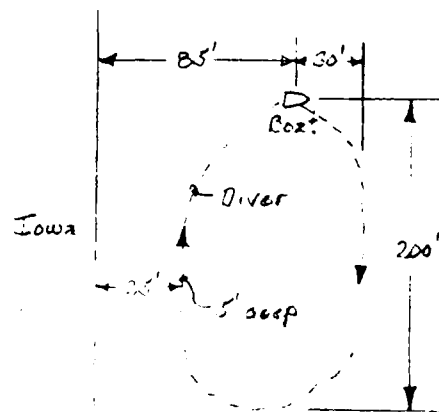
Sample Type Dive #4 Sample Location 1100' above wall; 85' from shore
11' deep

Species

Three Ridge (Amblema plicata)
Ebony Shell (Fusconaia ebenus)
Pig Toe (F. flava)
Washboard (Megaloniais nervosa)
Bullhead (Plethobasus cyphus)
Monkeyface (Quadrula metanevra)
Warty Back (Q. nodulata)
Pimple Back (Q. pustulosa)
Maple Leaf (Q. quadrula)
Floater (Anodonta grandis)
Paper Pond Shell (Anodonta imbecillus)
Rock Pocketbook (Arcidens confragosus)
W. Heel Splitter (Lasmigona complanata)
Squaw Foot (Strophitus undulatus)
Mucket (Actinonaias carinata)
Pocketbook (Lampsilis ventricosa)
Fat Mucket (L. radiata siliquoidea)
Yellow Sandshell (L. teres)
Higgin's Eye (L. Higginsi)
Fragile Paper Shell (Leptodea fragilis)
Pink Paper Shell (L. laevissima)
Black Sand Shell (Ligumia recta) 1 small
3-Horned Warty Back (Obliquaria reflexa)
Hickory Nut (Obovaria olivaria)
Butterfly (Plagiola lineolata)
Pink Heel Splitter (Proptera alata) 2 Adult
Fawn's Foot (Truncilla donaciformis)
Deer Toe (T. truncata)
Spectacle-case (Cumberlandia monodonta)
Pleurobema sp.
Fat Pocketbook (Proptera cavax)
Liliput (Toxolasma parvus)

Comments:

1/2" mud over sand & gravel
1' visibility
slight current
scattered rocks (2-3" dia.)
@ 200' - 3"-4" deep mud
on return - 1/2" mud over sand & gravel



Date: 9-17-87

Mussel Survey

Lock 12

Sample Type Dredge #5

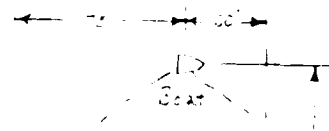
Sample Location 800' above wall; 75' from shore
10' deep

Species

Three Ridge (Amblema plicata)
Ebony Shell (Fusconaia ebenus)
Pig Toe (F. flava)
Washboard (Megalonaias nervosa)
Bullhead (Plethobasus cyphus)
Monkeyface (Quadrula metanevra)
Warty Back (Q. nodulata)
Pimple Back (Q. pustulosa)
Maple Leaf (Q. quadrula)
Floater (Anodonta grandis) 2 small
Paper Pond Shell (Anodonta imbecillus)
Rock Pocketbook (Arcidens confragosus)
W. Heel Splitter (Lasmigona complanata)
Squaw Foot (Strophitus undulatus)
Mucket (Actinonaias carinata)
Pocketbook (Lampsilis ventricosa)
Fat Mucket (L. radiata siliquioidea)
Yellow Sandshell (L. teres)
Higgin's Eye (L. Higginsi)
Fragile Paper Shell (Leptodea fragilis)
Pink Paper Shell (L. laevisissima)
Black Sand Shell (Ligumia recta)
3-Horned Warty Back (Obliquaria reflexa)
Hickory Nut (Obovaria olivaria)
Butterfly (Plagiola lineolata)
Pink Heel Splitter (Proptera alata) 3 Adult
Fawn's Foot (Truncilla donaciformis)
Deer Toe (T. truncata)
Spectacle-case (Cumberlandia monodonta)
Pleurobema sp.
Fat Pocketbook (Proptera capax)
Liliput (Toxolasma parvus)

Comments:

2" Mud over sand & gravel
1' visibility
Slight current
scattered 1" rocks
On return - hard picked sand & mud



Tide

Date: 9-17-87

Mussel Survey
Lock 12

Sample Type Dive # 6

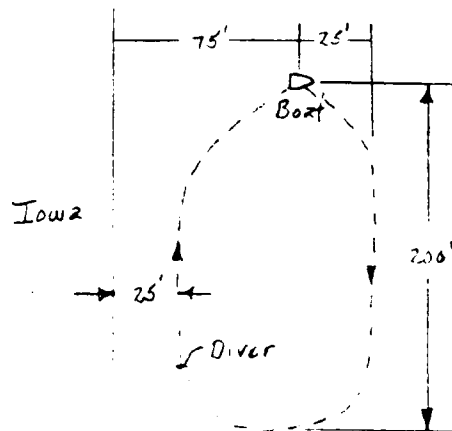
Sample Location 500' above wall; 75' from shore
10' deep

Species

Three Ridge (*Amblema plicata*)
Ebony Shell (*Fusconaia ebenus*)
Pig Toe (*F. flava*)
Washboard (*Megalonaias nervosa*)
Bullhead (*Plethobasus cyphus*)
Monkeyface (*Quadrula metanevra*)
Warty Back (*Q. nodulata*)
Pimple Back (*Q. pustulosa*)
Maple Leaf (*Q. quadrula*)
Floater (*Anodonta grandis*) 1 small
Paper Pond Shell (*Anodonta imbecillus*)
Rock Pocketbook (*Arcidens confragosus*)
W. Heel Splitter (*Lasmigona complanata*)
Squaw Foot (*Strophitus undulatus*)
Mucket (*Actinonaias carinata*)
Pocketbook (*Lampsilis ventricosa*)
Fat Mucket (*L. radiata siliquoidea*)
Yellow Sandshell (*L. teres*)
Higgin's Eye (*L. Higginsi*)
Fragile Paper Shell (*Leptodea fragilis*)
Pink Paper Shell (*L. laevis*)
Black Sand Shell (*Ligumia recta*)
3-Horned Warty Back (*Obliquaria reflexa*)
Hickory Nut (*Obovaria olivaria*)
Butterfly (*Plagiola lineolata*)
Pink Heel Splitter (*Proptera alata*) 2 small
Fawn's Foot (*Truncilla donaciformis*)
Deer Toe (*T. truncata*)
Spectacle-case (*Cumberlandia monodonta*)
Pleurobema sp.
Fat Pocketbook (*Proptera cadax*)
Liliput (*Toxolasma parvus*)

Comments:

1" mud over sand w/ gravel & small rocks
1' visibility
Scattered old shells
slight current
15' down - hard packed substrate
continues on return



Date: 9-18-87

Mussel Survey
Lock 12

Sample Type Dive #7

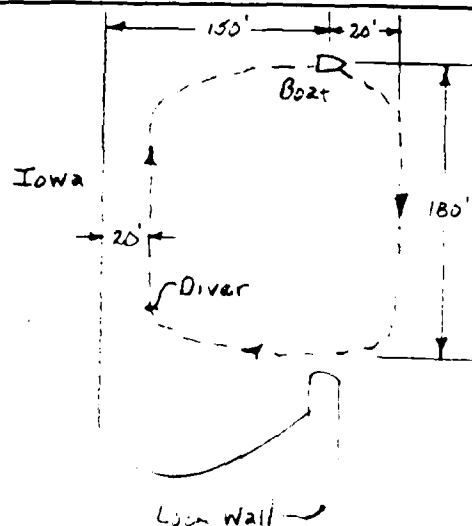
Sample Location 200' above wall; 150' from shore
in-line w/ wall
18' deep

Species

Three Ridge (*Amblema plicata*) 1 Adult
Ebony Shell (*Fusconaia ebenus*)
Pig Toe (*F. flava*)
Washboard (*Megalonaias nervosa*) 1 small (43 mm)
Bullhead (*Plethobasus cyphus*)
Monkeyface (*Quadrula metanevra*)
Warty Back (*Q. nodulata*)
Pimple Back (*Q. pustulosa*)
Maple Leaf (*Q. quadrula*) 1 Adult
Floater (*Anodonta grandis*) 1 Adult
Paper Pond Shell (*Anodonta imbecillus*)
Rock Pocketbook (*Arcidens confragosus*)
W. Heel Splitter (*Lasmigona complanata*)
Squaw Foot (*Strophitus undulatus*)
Mucket (*Actinonaias carinata*)
Pocketbook (*Lampsilis ventricosa*)
Fat Mucket (*L. radiata siliquioidea*)
Yellow Sandshell (*L. teres*)
Higgin's Eye (*L. Higginsi*)
Fragile Paper Shell (*Leptodea fragilis*) 1 Adult
Pink Paper Shell (*L. laevisissima*)
Black Sand Shell (*Ligumia recta*)
3-Horned Warty Back (*Obliquaria reflexa*)
Hickory Nut (*Obovaria olivaria*)
Butterfly (*Plagiola lineolata*)
Pink Heel Splitter (*Proptera alata*) 2 Adult
Fawn's Foot (*Truncilla donaciformis*)
Deer Toe (*T. truncata*)
Spectacle-case (*Cumberlandia monodonta*)
Pleurobema sp.
Fat Pocketbook (*Proptera capax*)
Liliput (*Toxolasma parvus*)

Comments:

1' Visibility
Very slight current
1/4" layer of silt over packed sand & gravel
Buried scattered rip-rap
Numerous scattered old shells
Pure sand substrate near shore



Date: 9-18-87

Mussel Survey
Lock 12

Sample Type Dive #8

Sample Location 2000' above wall - 235' from shore

in line w/ wall - both anchorages
23' deep

Species

Three Ridge (Amblema plicata) 1 Adult
Ebony Shell (Fusconaia ebenus)
Pig Toe (F. flava)
Washboard (Megaloniais nervosa)
Bullhead (Plethobasus cyphus)
Monkeyface (Quadrula metanevra)
Warty Back (Q. nodulata)
Pimple Back (Q. pustulosa)
Maple Leaf (Q. quadrula)
Floater (Anodonta grandis) 1 small
Paper Pond Shell (Anodonta imbecillus)
Rock Pocketbook (Arcidens confragosus)
W. Heel Splitter (Lasmigona complanata)
Squaw Foot (Strophitus undulatus)
Mucket (Actinonaias carinata)
Pocketbook (Lampsilis ventricosa) 2 Adults / small
Fat Mucket (L. radiata siliquoidea)
Yellow Sandshell (L. teres)
Higgin's Eye (L. Higginsi)
Fragile Paper Shell (Leptodea fragilis) 2 Adults
Pink Paper Shell (L. laevis) 1 Adult
Black Sand Shell (Ligumia recta) 5 Adults
3-Horned Warty Back (Obliquaria reflexa) 1 Adult
Hickory Nut (Obovaria olivaria)
Butterfly (Plagiola lineolata)
Pink Heel Splitter (Proptera alata) 4 Adults
Fawn's Foot (Truncilla donaciformis)
Deer Toe (T. truncata) 2 Adults
Spectacle-case (Cumberlandia monodonta)
Pleurobema sp.
Fat Pocketbook (Proptera carax)
Liliput (Toxolasma parvus)

Comments:

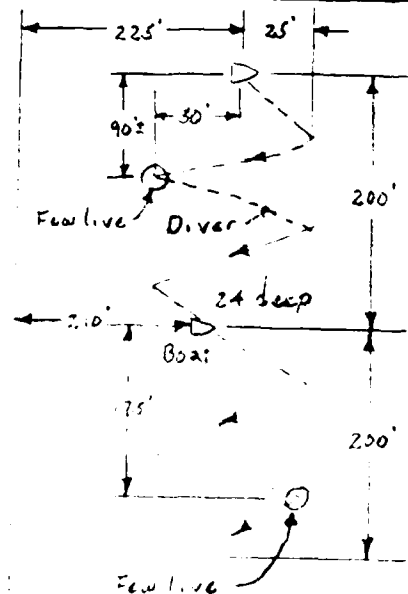
Fairly strong current
Mixed sand & gravel w/ numerous old shells
1' visibility w/ light
Gravel up to 1½" dia
1' of silt over granular on 10:1 slope back toward Iowa
2' of silt over granular @ 175' down

Re-answer

Clean granular substrate w/ occasional gravel

Moderate current

1' v. z. 0.1 + 1



Date: 7-8-87

Mussel Survey
Lock 12

Sample Type Dive #9

Sample Location 1500' above wall; 200' from shore
in line w/ wall - 1st & 2nd Re-anchorage
25' deep

Species

Three Ridge (Amblema plicata)
Ebony Shell (Fusconaia ebenus)
Pig Toe (F. flava)
Washboard (Megalonaias nervosa)
Bullhead (Plethobasus cyphus)
Monkeyface (Quadrula metanevra)
Warty Back (Q. nodulata)
Pimple Back (Q. pustulosa)
Maple Leaf (Q. quadrula)
Floater (Anodonta grandis)
Paper Pond Shell (Anodonta imbecillus)
Rock Pocketbook (Arcidens confragosus)
W. Heel Splitter (Lasmigona complanata)
Squaw Foot (Strophitus undulatus)
Mucket (Actinonaias carinata)
Pocketbook (Lampsilis ventricosa)
Fat Mucket (L. radiata siliquoidea)
Yellow Sandshell (L. teres)
Higgin's Eye (L. Higginsi)
Fragile Paper Shell (Leptodea fragilis)
Pink Paper Shell (L. laevisissima)
Black Sand Shell (Ligumia recta)
3-Horned Warty Back (Obliquaria reflexa)
Hickory Nut (Obovaria olivaria)
Butterfly (Plagiola lineolata)
Pink Heel Splitter (Proptera alata)
Fawn's Foot (Truncilla donaciformis)
Deer Toe (T. truncata)
Spectacle-case (Cumberlandia monodonta)
Pleurobema sp.
Fat Pocketbook (Proptera capax)
Liliput (Toxolasma parvus)

See next page

Comments:

Descended into pile of cable beneath boat
Sand & gravel w/ few large rocks up to 18" dia.
Numerous scattered old shells
Fairly strong current
visibility w/ light
1" of light silt over granular 100' below boat
Larger rock 160' from Iowa

5 live

1st Re-anch

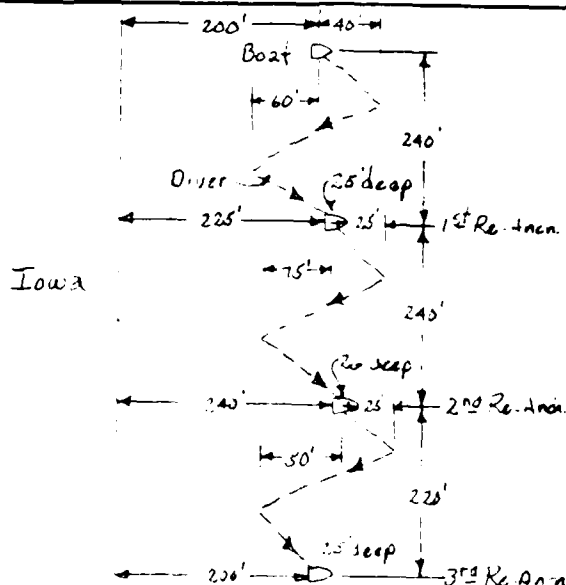
Clear sand & gravel
Current & visibility same

2 live

2nd Re-anch

Clear sand & gravel
Current & visibility same

2 live



Date: 2-18-57

Mussel Survey
Lock 12

Sample Type Dive #9 (cont'd.) Sample Location 200' above wall - 200' from shore
3rd Re-Anchor 25' toward Ill. from wall
25' deep

Species

Three Ridge (*Amblema plicata*)
 Ebony Shell (*Fusconaia ebenus*)
 Pig Toe (*F. flava*)
 Washboard (*Megaloniais nervosa*) 3 Adult
 Bullhead (*Plethobasus cyphus*)
 Monkeyface (*Quadrula metanevra*)
 Warty Back (*Q. nodulata*)
 Pimple Back (*Q. pustulosa*)
 Maple Leaf (*Q. quadrula*)
 Floater (*Anodonta grandis*) 1 Adult
 Paper Pond Shell (*Anodonta imbecillus*)
 Rock Pocketbook (*Arcidens confragosus*)
 W. Heel Splitter (*Lasmigona complanata*)
 Squaw Foot (*Strophitus undulatus*)
 Mucket (*Actinonaias carinata*)
 Pocketbook (*Lampsilis ventricosa*) 1 Adult
 Fat Mucket (*L. radiata siliquoidea*)
 Yellow Sandshell (*L. teres*)
 Higgin's Eye (*L. Higginsi*)
 Fragile Paper Shell (*Leptodea fragilis*) 1 Adult
 Pink Paper Shell (*L. laevisissima*)
 Black Sand Shell (*Ligumia recta*) 2 Adult
 3-Horned Warty Back (*Obliquaria reflexa*)
 Hickory Nut (*Obovaria olivaria*)
 Butterfly (*Plagiola lineolata*)
 Pink Heel Splitter (*Proptera alata*) 4 Adult
 Fawn's Foot (*Truncilla donaciformis*)
 Deer Toe (*I. truncata*)
 Spectacle-case (*Cumberlandia monodonta*)
 Pleurobema sp.
 Fat Pocketbook (*Proptera capax*)
 Liliput (*Toxolasma parvus*)

All shells from Dive #9

Comments:

3rd Re-anchor

Clean sand & gravel
 1"-1 1/2" of silt 150' from Iowa bank starts up
 Moderate current
 1' visibility w/ light

1 live

4th Re-anchor

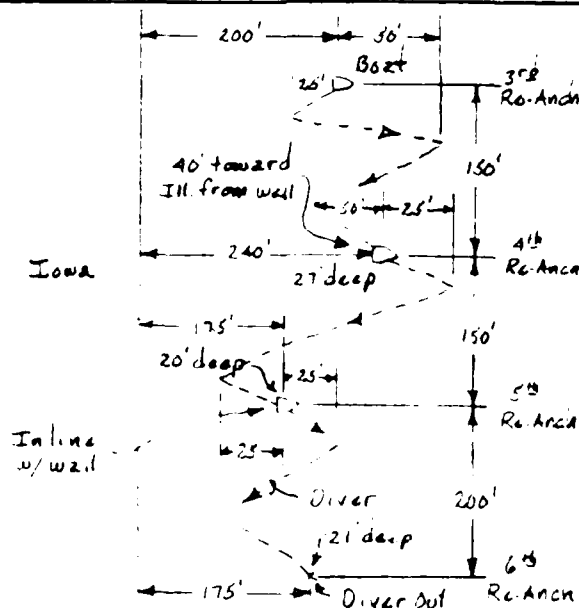
Numerous old shells
 Clean sand & gravel
 Current & visibility same

1 live

5th Re-anchor

Current & visibility same
 Mud toward Ill. from boat
 1" deep mud over sand & gravel elsewhere

1 live



Date: 9-3-87

Mussel Survey
Lock 15

Sample Type Dive #1

Sample Location 2000' above wall; 225' from shore
40' riverward of lock wall
19' deep

Species

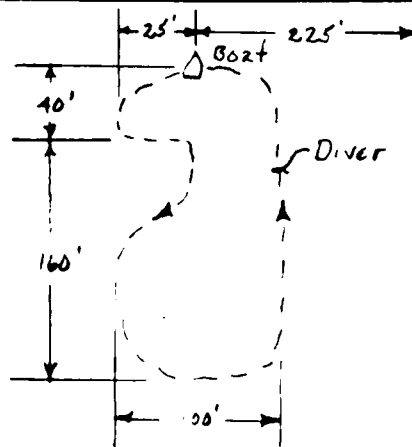
Three Ridge (Amblema plicata)
Ebony Shell (Fusconaia ebenus)
Pig Toe (F. flava)
Washboard (Megalonaias nervosa)
Bullhead (Plethobasus cyphus)
Monkeyface (Quadrula metanevra)
Warty Back (Q. nodulata)
Pimple Back (Q. pustulosa) 1 Adult
Maple Leaf (Q. quadrula)
Floater (Anodonta grandis) 1 Small
Paper Pond Shell (Anodonta imbecillus)
Rock Pocketbook (Arcidens confragosus)
W. Heel Splitter (Lasmigona complanata)
Squaw Foot (Strophitus undulatus)
Mucket (Actinonaias carinata)
Pocketbook (Lampsilis ventricosa)
Fat Mucket (L. radiata siligoidea)
Yellow Sandshell (L. teres)
Higgin's Eye (L. Higginsi)
Fragile Paper Shell (Leptodea fragilis)
Pink Paper Shell (L. laevisissima)
Black Sand Shell (Ligumia recta) 1 Adult
3-Horned Warty Back (Obliquaria reflexa)
Hickory Nut (Obovaria olivaria)
Butterfly (Plagiola lineolata)
Pink Heel Splitter (Proptera alata) 1 Small
Fawn's Foot (Truncilla donaciformis)
Deer Toe (T. truncata)
Spectacle-case (Cumberlandia monodonta)
Pleurobema sp.
Fat Pocketbook (Proptera cavax)
Liliput (Toxolasma parvus)

Comments:

Solid smooth bedrock bottom
w/ a few crevasses

On return: 1"-3" of mud over bedrock

Moderate current



Date: 9-3-87

Mussel Survey
Lock 15

Sample Type Dive #2
1/4 m² sample

Sample Location 2000' above wall; 110' from shore
16' deep

Species

Three Ridge (Amblema plicata) 1 (80 mm)
Ebony Shell (Fusconaia ebenus)
Pig Toe (F. flava)
Washboard (Megaloniais nervosa) 6 (150, 145, 140, 138, 137, 130 mm)
Bullhead (Plethobasus cyphus)
Monkeyface (Quadrula metanevra)
Warty Back (Q. nodulata)
Pimple Back (Q. pustulosa)
Maple Leaf (Q. quadrula) 1 (16 mm)
Floater (Anodonta grandis) 1 (130 mm)
Paper Pond Shell (Anodonta imbecillus)
Rock Pocketbook (Arcidens confragosus)
W. Heel Splitter (Lasmigona complanata)
Squaw Foot (Strophitus undulatus)
Mucket (Actinonaias carinata)
Pocketbook (Lampsilis ventricosa)
Fat Mucket (L. radiata siliquioidea)
Yellow Sandshell (L. teres)
Higgin's Eye (L. Higginsi)
Fragile Paper Shell (Leptodea fragilis) 3 (73, 70, 67 mm)
Pink Paper Shell (L. laevis)
Black Sand Shell (Ligumia recta)
3-Horned Warty Back (Obliquaria reflexa) 3 (38, 30, 25 mm)
Hickory Nut (Obovaria olivaria)
Butterfly (Plagiola lineolata)
Pink Heel Splitter (Proptera alata) 1 (74 mm)
Fawn's Foot (Truncilla donaciformis) 1 (17 mm)
Deer Toe (T. truncata) 4 (48, 44, 43, 35 mm)
Spectacle-case (Cumberlandia monodonta)
Pleurobema sp.
Fat Pocketbook (Proptera capax)
Liliput (Toxolasma parvus)

Comments:

Loose rock & mud substrate

6" of mud over bedrock

Boat anchored over bed - 1/4 m² density sample

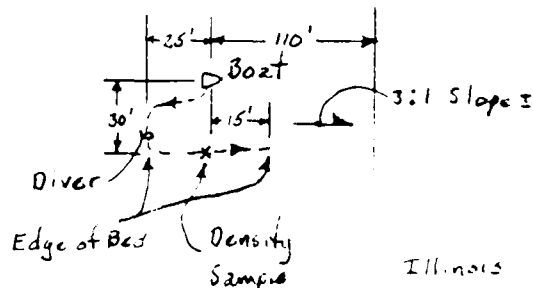
Few subfossil shells

18 dead whole valves including 1 corbicula

21 live x 4 = 84/m²

9 species

Bed sporadic - mud sand & some gravel over bedrock
35-40' ± wide



Date: 9-3-87

Mussel Survey
Lock 15

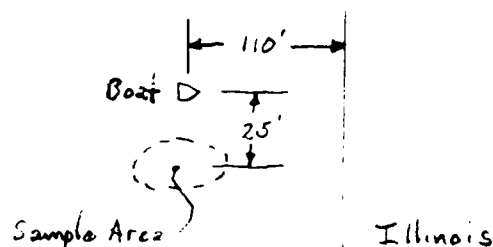
Sample Type Dive # 2 (cont'd) Sample Location 2000' from wall

Species

Three Ridge (Amblema plicata) 5
Ebony Shell (Fusconaia ebenus)
Pig Toe (F. flava)
Washboard (Megaloniais nervosa) 9
Bullhead (Plethobasus cyphus)
Monkeyface (Quadrula metanevra)
Warty Back (Q. nodulata)
Pimple Back (Q. pustulosa) 3
Maple Leaf (Q. quadrula) 2
Floater (Anodonta grandis)
Paper Pond Shell (Anodonta imbecillus)
Rock Pocketbook (Arcidens confragosus)
W. Heel Splitter (Lasmigona complanata)
Squaw Foot (Strophitus undulatus)
Mucket (Actinonaias carinata)
Pocketbook (Lampsilis ventricosa) 2
Fat Mucket (L. radiata siliquioidea)
Yellow Sandshell (L. teres)
Higgin's Eye (L. Higginsi)
Fragile Paper Shell (Leptodea fragilis) 7
Pink Paper Shell (L. laevissima)
Black Sand Shell (Ligumia recta)
3-Horned Warty Back (Obliquaria reflexa)
Hickory Nut (Obovaria olivaria)
Butterfly (Plagiola lineolata) 2
Pink Heel Splitter (Proptera alata) 6
Fawn's Foot (Truncilla donaciformis)
Deer Toe (T. truncata) 3
Spectacle-case (Cumberlandia monodonta)
Pleurobema sp.
Fat Pocketbook (Proptera cavax)
Liliput (Toxolasma parvus)

Comments:

Filling bag w/ live individuals
to check composition



Date: 9-3-87

Mussel Survey
Lack 15

Sample Type Dive #3

Sample Location 1875' above wall; 110' from shore
16' deep

Species

Three Ridge (*Amblema plicata*) 6 (92, 82, 78, 75, 53, 33 mm)

Ebony Shell (*Fusconaia eburnus*)

Pig Toe (*F. flava*)

Washboard (*Megalonaias nervosa*) 7 (147, 143, 142, 133, 132, 125, 125 mm)

Bullhead (*Plethobasus cyphus*)

Monkeyface (*Quadrula metanevra*)

Warty Back (*Q. nodulata*) 1 (42 mm)

Pimple Back (*Q. pustulosa*) 7 (50, 50, 44, 40, 37, 35, 13 mm)

Maple Leaf (*Q. quadrula*) 1 (65 mm)

Floater (*Anodonta grandis*) 1 (128 mm)

Paper Pond Shell (*Anodonta imbecillus*)

Rock Pocketbook (*Arcidens confragosus*)

W. Heel Splitter (*Lasmigona complanata*)

Squaw Foot (*Strophitus undulatus*)

Mucket (*Actinonaias carinata*)

Pocketbook (*Lampsilis ventricosa*)

Fat Mucket (*L. radiata siliquoidea*)

Yellow Sandshell (*L. teres*)

Higgin's Eye (*L. Higginsi*)

Fragile Paper Shell (*Leptodea fragilis*) 1 (58 mm)

Pink Paper Shell (*L. laevissima*)

Black Sand Shell (*Ligumia recta*)

3-Horned Warty Back (*Obliquaria reflexa*) 3 (42, 40, 36 mm)

Hickory Nut (*Obovaria olivaria*)

Butterfly (*Plagiola lineolata*)

Pink Heel Splitter (*Proptera alata*) 1 (118 mm)

Fawn's Foot (*Truncilla donaciformis*)

Deer Toe (*T. truncata*) 8 (44, 37, 35, 35, 30, 27, 26, 26 mm)

Spectacle-case (*Cumberlandia monodonta*)

Pleurobema sp.

Fat Pocketbook (*Proptera cabax*)

Liliput (*Toxolasma parvus*)

Comments:

Substrate Sand & mud mix

Took $\frac{1}{4}$ m² density sample @ boat

Diver then followed edge of bed to define limits

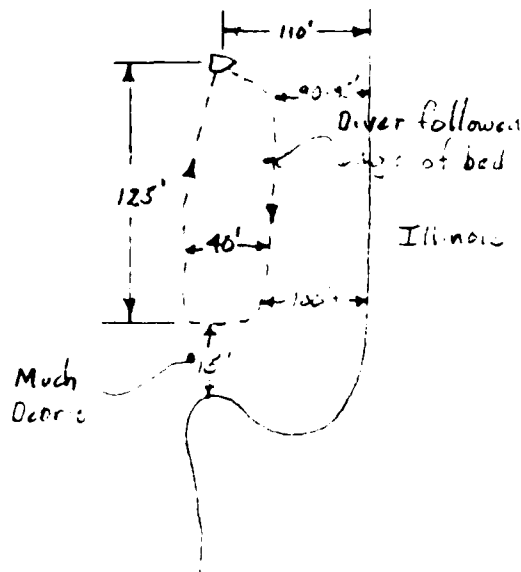
$\frac{1}{4}$ m² density sample

Few subfossil & old shells

8 dead whole valves

36 live x 4 = 144 m²

10 species



Date: 9-3-87

Mussel Survey
Lock 15

Sample Type Dive #4
800' Drift Dive

Sample Location 1700' from wall - anchored @ shore
5-6' deep @ boat
lock wall - 20' from shore

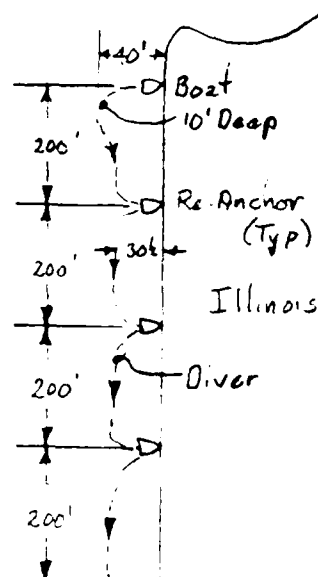
Species

Three Ridge (Amblema plicata)
Ebony Shell (Fusconaia ebenus)
Pig Toe (F. flava)
Washboard (Megalonaias nervosa)
Bullhead (Plethobasus cyphus)
Monkeyface (Quadrula metanevra)
Warty Back (Q. nodulata)
Pimple Back (Q. pustulosa)
Maple Leaf (Q. quadrula)
Floater (Anodonta grandis)
Paper Pond Shell (Anodonta imbecillus)
Rock Pocketbook (Arcidens confragosus)
W. Heel Splitter (Lasmigona complanata)
Squaw Foot (Strophitus undulatus)
Mucket (Actinonaias carinata)
Pocketbook (Lampsilis ventricosa)
Fat Mucket (L. radiata siliquoidea)
Yellow Sandshell (L. teres)
Higgin's Eye (L. Higgin'si)
Fragile Paper Shell (Leptodea fragilis)
Pink Paper Shell (L. laevissima)
Black Sand Shell (Ligumia recta)
3-Horned Warty Back (Obliquaria reflexa)
Hickory Nut (Obovaria olivaria)
Butterfly (Plagiola lineolata)
Pink Heel Splitter (Proptera alata)
Fawn's Foot (Truncilla donaciformis)
Deer Toe (T. truncata)
Spectacle-case (Cumberlandia monodonta)
Pleurobema sp.
Fat Pocketbook (Proptera capax)
Liliput (Toxolasma parvus)

Nothing
2

Comments:

Rip-rap bottom - entire drift
Visibility - 2-3' w/ light
Very little current



Date: 7-3-87

Mussel Survey
Lock 15

Sample Type Dive #5

Sample Location 750' above wall; in line w/ wall
40' from shore
8' deep

Species

Three Ridge (Amblema plicata)
Ebony Shell (Fusconaia ebenus)
Pig Toe (F. flava)
Washboard (Megalonaias nervosa)
Bullhead (Plethobasus cyphus)
Monkeyface (Quadrula metanevra)
Warty Back (Q. nodulata)
Pimple Back (Q. pustulosa)
Maple Leaf (Q. quadrula)
Floater (Anodonta grandis)
Paper Pond Shell (Anodonta imbecillus)
Rock Pocketbook (Arcidens confragosus)
W. Heel Splitter (Lasmigona complanata)
Squaw Foot (Strophitus undulatus)
Mucket (Actinonaias carinata)
Pocketbook (Lampsilis ventricosa)
Fat Mucket (L. radiata siliquioidea)
Yellow Sandshell (L. teres)
Higgin's Eye (L. higginsii)
Fragile Paper Shell (Leptodea fragilis)
Pink Paper Shell (L. laevissima)
Black Sand Shell (Ligumia recta)
3-Horned Warty Back (Obliquaria reflexa)
Hickory Nut (Obovaria olivaria)
Butterfly (Plagiola lineolata)
Pink Heel Splitter (Proptera alata)
Fawn's Foot (Truncilla donaciformis)
Deer Toe (T. truncata)
Spectacle-case (Cumberlandia monodonta)
Pleurobema sp.
Fat Pocketbook (Proptera cabax)
Liliput (Toxolasma parvus)

Nothing

Comments:

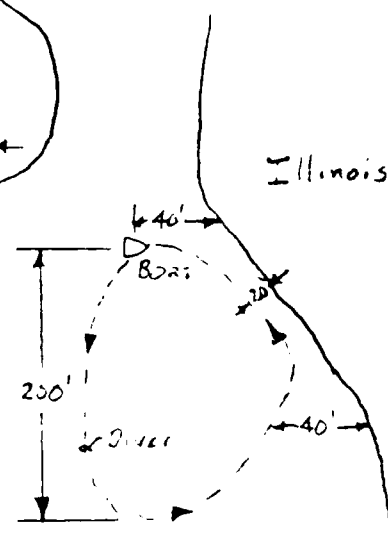
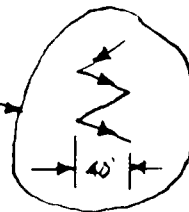
Rip-rap bottom
3' visibility w/ light
Little current
Spotted 3" catfish

@ 150' from boat - some mud w/ scattered old shells
@ 200' - mud, sand, gravel

Return swim

fine sand w/ some mud & gravel

Followed broad
"Zig-Zag" pattern
on downstream
swim!



Date: 9-3-87

Mussel Survey
Lock 15

Sample Type Dive #6

Sample Location

475' above wall; in-line w/ wall
120' from shore
15' deep

Species

Three Ridge (*Amblema plicata*)
Ebony Shell (*Fusconaia eburnea*)
Pig Toe (*F. flava*)
Washboard (*Megalonaias nervosa*)
Bullhead (*Plethobasus cyphus*)
Monkeyface (*Quadrula metanevra*)
Warty Back (*Q. nodulata*)
Pimple Back (*Q. pustulosa*)
Maple Leaf (*Q. quadrula*)
Floater (*Anodonta grandis*)
Paper Pond Shell (*Anodonta imbecillus*)
Rock Pocketbook (*Arcidens confragosus*)
W. Heel Splitter (*Lasmigona complanata*)
Squaw Foot (*Strophitus undulatus*)
Mucket (*Actinonaias carinata*)
Pocketbook (*Lampsilis ventricosa*)
Fat Mucket (*L. radiata siliquioidea*)
Yellow Sandshell (*L. teres*)
Higgin's Eye (*L. Higginsi*)
Fragile Paper Shell (*Leptodea fragilis*)
Pink Paper Shell (*L. laevissima*)
Black Sand Shell (*Ligumia recta*)
3-Horned Warty Back (*Obliquaria reflexa*)
Hickory Nut (*Obovaria olivaria*)
Butterfly (*Plagiola lineolata*)
Pink Heel Splitter (*Proptera alata*)
Fawn's Foot (*Truncilla donaciformis*)
Deer Toe (*T. truncata*)
Spectacle-case (*Cumberlandia monodonta*)
Pleurobema sp.
Fat Pocketbook (*Proptera capax*)
Liliput (*Toxolasma parvus*)

Nothing

Comments:

Rip-rap bottom - at boat

2'-3" visibility

Mud between rocks

Slight Current

@ 75' - out of rip-rap; begin coarse sand w/ mud

@ 100' - mud over loose rock

@ 125' - sand/mud mix

@ 150' - loose rock

@ 200' - all mud

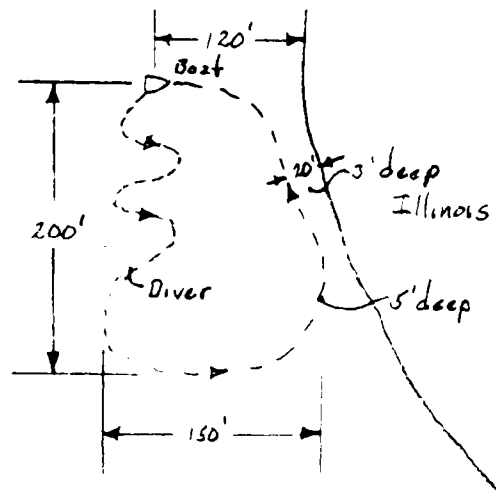
Return swim:

6" mud over hard mud & sand

@ 175' mud over rock

@ 75' pure mud

then rip-rap near boat



Date: 9-4-67

Mussel Survey
Lock 15

Sample Type Dive #7 Sample Location 1900' above wall; 95' from shore
1/4 m² density sample 17' deep

Species

Three Ridge (*Amblema plicata*) 4 (75, 51, 41, 35 mm)
Ebony Shell (*Fusconaia eburnus*)
Pig Toe (*F. flava*)
Washboard (*Megalonaias nervosa*) 3 (150, 132, 126 mm)
Bullhead (*Plethobasus cyphus*)
Monkeyface (*Quadrula metanevra*)
Warty Back (*Q. nodulata*)
Pimple Back (*Q. pustulosa*) 2 (51, 41 mm)
Maple Leaf (*Q. quadrula*) 3 (53, 52, 52 mm)
Floater (*Anodonta grandis*)
Paper Pond Shell (*Anodonta imbecillus*)
Rock Pocketbook (*Arcidens confragosus*)
W. Heel Splitter (*Lasmigona complanata*)
Squaw Foot (*Strophitus undulatus*)
Mucket (*Actinonaias carinata*)
Pocketbook (*Lampsilis ventricosa*)
Fat Mucket (*L. radiata siliquoidea*)
Yellow Sandshell (*L. teres*)
Higgin's Eye (*L. Higginsi*)
Fragile Paper Shell (*Leptodea fragilis*) 4 (75, 68, 64, 50 mm)
Pink Paper Shell (*L. laevissima*)
Black Sand Shell (*Ligumia recta*)
3-Horned Warty Back (*Obliquaria reflexa*)
Hickory Nut (*Obovaria olivaria*)
Butterfly (*Plagiola lineolata*)
Pink Heel Splitter (*Proptera alata*) 2 (117, 65 mm)
Fawn's Foot (*Truncilla donaciformis*)
Deer Toe (*T. truncata*) 3 (34, 28, 9 mm)
Spectacle-case (*Cumberlandia monodonta*)
Pleurobema sp.
Fat Pocketbook (*Proptera cavax*)
Liliput (*Toxolasma parvus*)

Comments:

Rock, mud, sand substrate

Light current

2'-3' visibility w/ light

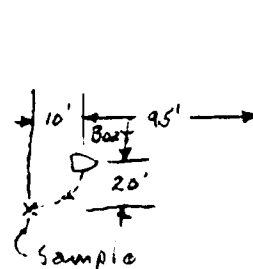
On bed - 1/4 m² density sample

Few subfossil & old shells

13 whole dead valves

21 live x 4 = 84/m²

7 species



Illinois

Date: 9-4-87

Mussel Survey
Lock 15

Sample Type Dive #8 Sample Location 1800' above wall; 100' from shore
1/4 m² density sample
15' deep

Species

Three Ridge (*Amblema plicata*) 7 (108, 103, 98, 88, 71, 46, 32 mm)
Ebony Shell (*Fusconaia ebenus*)
Pig Toe (*F. flava*)
Washboard (*Megalonaias nervosa*)
Bullhead (*Plethobasus cyphus*)
Monkeyface (*Quadrula metanevra*) 1 (41 mm)
Warty Back (*Q. nodulata*) 2 (38, 38 mm)
Pimple Back (*Q. pustulosa*) 10 (53, 53, 50, 47, 44, 43, 42, 34, 30, 29 mm)
Maple Leaf (*Q. quadrula*) 1 (59 mm)
Floater (*Anodonta grandis*)
Paper Pond Shell (*Anodonta imbecillus*)
Rock Pocketbook (*Arcidens confragosus*)
W. Heel Splitter (*Lasmigona complanata*)
Squaw Foot (*Strophitus undulatus*)
Mucket (*Actinonaias carinata*)
Pocketbook (*Lampsilis ventricosa*) 1 (115 mm)
Fat Mucket (*L. radiata siliquoidea*)
Yellow Sandshell (*L. teres*)
Higgin's Eye (*L. Higginsi*)
Fragile Paper Shell (*Leptodea fragilis*) 4 (93, 85, 69, 55 mm)
Pink Paper Shell (*L. laevissima*) 1 (59 mm)
Black Sand Shell (*Ligumia recta*)
3-Horned Warty Back (*Obliquaria reflexa*) 2 (35, 29 mm)
Hickory Nut (*Obovaria olivaria*)
Butterfly (*Plagiola lineolata*) 2 (67, 42 mm)
Pink Heel Splitter (*Proptera alata*) 1 (73 mm)
Fawn's Foot (*Truncilla donaciformis*)
Deer Toe (*T. truncata*) 6 (45, 39, 36, 35, 35, 27 mm)
Spectacle-case (*Cumberlandia monodonta*)
Pleurobema sp.
Fat Pocketbook (*Proptera capax*)
Liliput (*Toxolasma parvus*)

Comments:

Sand substrate w/ some scattered rock

Light current

2-3' visibility w/ light

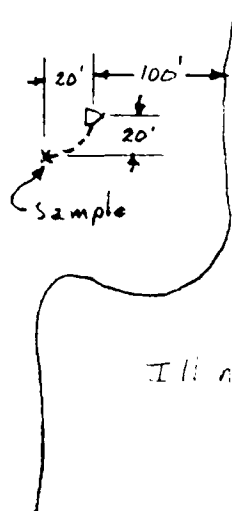
1/4 m² density sample

Few subfossil & old shells

13 whole dead valves

38 live x 4 = 152/m²

12 species



Date: 9-4-87

Mussel Survey
Lock 15

Sample Type Dive # 9

Sample Location 225' above wall: in new wall
18' deep

Species

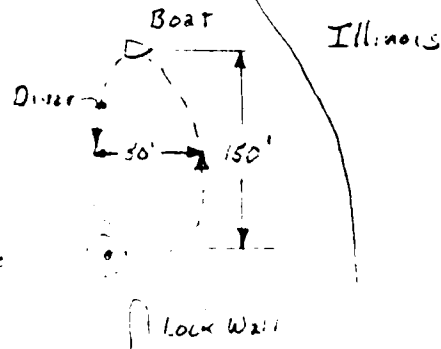
Three Ridge (Amblema plicata)
Ebony Shell (Fusconaia ebenus)
Pig Toe (F. flava)
Washboard (Megaloniais nervosa)
Bullhead (Plethobasus cyphus)
Monkeyface (Quadrula metanevra)
Warty Back (Q. nodulata)
Pimple Back (Q. pustulosa)
Maple Leaf (Q. quadrula)
Floater (Anodonta grandis)
Paper Pond Shell (Anodonta imbecillus)
Rock Pocketbook (Arcidens confragosus)
W. Heel Splitter (Lasmigona complanata)
Squaw Foot (Strophitus undulatus)
Mucket (Actinonaias carinata)
Pocketbook (Lampsilis ventricosa)
Fat Mucket (L. radiata siliquioidea)
Yellow Sandshell (L. teres)
Higgin's Eye (L. Higginsi)
Fragile Paper Shell (Leptodea fragilis)
Pink Paper Shell (L. laevissima)
Black Sand Shell (Ligumia recta)
3-Horned Warty Back (Obliquaria reflexa)
Hickory Nut (Obovaria olivaria)
Butterfly (Plagiola lineolata)
Pink Heel Splitter (Proptera alata)
Fawn's Foot (Truncilla donaciformis)
Deer Toe (T. truncata)
Spectacle-case (Cumberlandia monodonta)
Pleurobema sp.
Fat Pocketbook (Proptera capax)
Liliput (Toxolasma parvus)

Nothing
~

Comments:

Small rock/rubble - w/ some sand & gravel
Very slight current
2'-3' visibility w/ light
Sand down 100' - some scattered old shells
Diver caught in heavy debris @ wall
Re-rod thru helmet
Cable around leg

Heavy Debris
+ near wall
Cable around leg to



Date: 9-4-87

Mussel Survey

Lock 15

Sample Type Dive # 10

Sample Location

1950' from wall; 100' from shore
19' deep

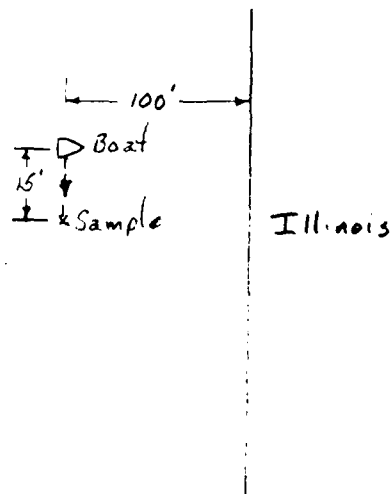
Species

Three Ridge (Amblema plicata) 1 (45 mm)
 Ebony Shell (Fusconaia eburnus)
 Pig Toe (F. flava)
 Washboard (Megalonaias nervosa) 2 (128, 128 mm)
 Bullhead (Plethobasus cyphus)
 Monkeyface (Quadrula metanevra)
 Warty Back (Q. nodulata)
 Pimple Back (Q. pustulosa) 5 (43, 43, 41, 35, 33 mm)
 Maple Leaf (Q. quadrula) 1 (44 mm)
 Floater (Anodonta grandis)
 Paper Pond Shell (Anodonta imbecillus)
 Rock Pocketbook (Arcidens confragosus)
 W. Heel Splitter (Lasmigona complanata)
 Squaw Foot (Strophitus undulatus)
 Mucket (Actinonaias carinata)
 Pocketbook (Lampsilis ventricosa)
 Fat Mucket (L. radiata siliquoidea)
 Yellow Sandshell (L. teres)
 Higgin's Eye (L. Higginsi)
 Fragile Paper Shell (Leptodea fragilis) 2 (79, 45 mm)
 Pink Paper Shell (L. laevissima) 1 (60 mm)
 Black Sand Shell (Ligumia recta)
 3-Horned Warty Back (Obliquaria reflexa) 2 (34, 25 mm)
 Hickory Nut (Obovaria olivaria)
 Butterfly (Plagiola lineolata)
 Pink Heel Splitter (Proptera alata) 1 (77 mm)
 Fawn's Foot (Truncilla donaciformis)
 Deer Toe (T. truncata) 9 (41, 37, 32, 31, 30, 28, 28, 26, 26 mm)
 Spectacle-case (Cumberlandia monodonta)
 Pleurobema sp.
 Fat Pocketbook (Proptera capax)
 Liliput (Toxolasma parvus)

Comments:

Sand + mud mixed w/ scattered rip-rap
 slight current
 2-3' visibility w/ light

$\frac{1}{4}$ m² density sample
 Few subfossil & old shells
 11 dead whole valves
 24 live $\times 4 = 96/m^2$
 9 species



Date: 9-4-87

Mussel Survey
Lock 15

Sample Type Dive # 11

Sample Location 1950' from water; 100' from shore
14' deep

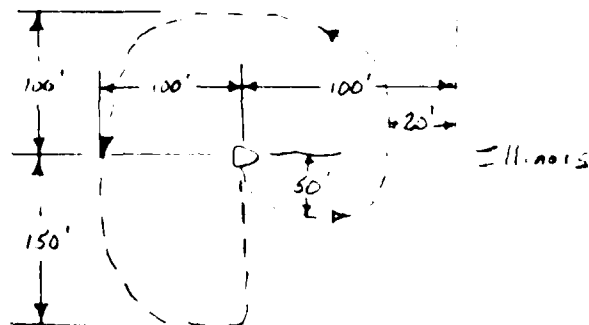
Species

Three Ridge (Amblema plicata)
Ebony Shell (Fusconaia ebenus)
Pig Toe (F. flava)
Washboard (Megalonaias nervosa)
Bullhead (Plethobasus cyphus)
Monkeyface (Quadrula metanevra)
Warty Back (Q. nodulata)
Pimple Back (Q. pustulosa)
Maple Leaf (Q. quadrula)
Floater (Anodonta grandis)
Paper Pond Shell (Anodonta imbecillus)
Rock Pocketbook (Arcidens confragosus)
W. Heel Splitter (Lasmigona complanata)
Squaw Foot (Strophitus undulatus)
Mucket (Actinonaias carinata)
Pocketbook (Lampsilis ventricosa)
Fat Mucket (L. radiata siligoidea)
Yellow Sandshell (L. teres)
Higgin's Eye (L. Higginsi)
Fragile Paper Shell (Leptodea fragilis)
Pink Paper Shell (L. laevisissima)
Black Sand Shell (Ligumia recta)
3-Horned Warty Back (Obliquaria reflexa)
Hickory Nut (Obovaria olivaria)
Butterfly (Plagiola lineolata)
Pink Heel Splitter (Proptera alata)
Fawn's Foot (Truncilla donaciformis)
Deer Toe (T. truncata)
Spectacle-case (Cumberlandia monodonta)
Pleurobema sp.
Fat Pocketbook (Proptera capax)
Liliput (Toxolasma parvus)

No collection

Comments:

Long loop to substantiate bed location
& substrate checked w/ previous work



Date: 9-4-87

Mussel Survey
Lock 15

Sample Type Dive # 12

Sample Location 1950' from wall; 100' from shore
19' deep

Species

Three Ridge (Amblema plicata) 19
Ebony Shell (Fusconaia ebenus)
Pig Toe (F. flava)
Washboard (Megalonaias nervosa) 13
Bullhead (Plethobasus cyphus)
Monkeyface (Quadrula metanevra)
Warty Back (Q. nodulata) 2
Pimple Back (Q. pustulosa) 7
Maple Leaf (Q. quadrula) 3
Floater (Anodonta grandis) 4
Paper Pond Shell (Anodonta imbecillus) 1
Rock Pocketbook (Arcidens confragosus)
W. Heel Splitter (Lasmigona complanata)
Squaw Foot (Strophitus undulatus) 1
Mucket (Actinonaias carinata)
Pocketbook (Lampsilis ventricosa)
Fat Mucket (L. radiata siliquoidea)
Yellow Sandshell (L. teres)
Higgin's Eye (L. Higginsi)
Fragile Paper Shell (Leptodea fragilis) 17
Pink Paper Shell (L. laevissima)
Black Sand Shell (Ligumia recta)
3-Horned Warty Back (Obliquaria reflexa) 4
Hickory Nut (Obovaria olivaria)
Butterfly (Plagiola lineolata)
Pink Heel Splitter (Proptera alata) 6
Fawn's Foot (Truncilla donaciformis) 2
Deer Toe (T. truncata) 7
Spectacle-case (Cumberlandia monodonta)
Pleurobema sp.
Fat Pocketbook (Proptera capax)
Liliput (Toxolasma parvus)

Comments:

Collection transect through bed - 1'± wide x 35-40' long

Smaller individuals & smaller species
near outer edge w/ larger in "heart of bed"

Date: 8-19-87

Mussel Survey
Lock 16

Sample Type Dive #1

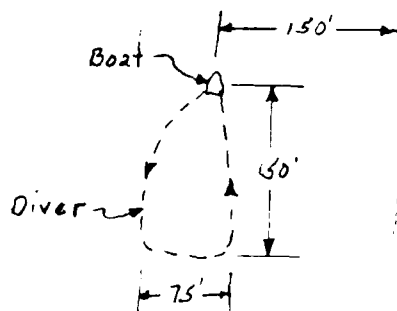
Sample Location 2000' above wall, 150' from shore
15' deep

Species

Three Ridge (Amblema plicata)
Ebony Shell (Fusconaia ebenus)
Pig Toe (F. flava)
Washboard (Megalonaias nervosa)
Bullhead (Plethobasus cyphus)
Monkeyface (Quadrula metanevra)
Warty Back (Q. nodulata)
Pimple Back (Q. pustulosa)
Maple Leaf (Q. quadrula)
Floater (Anodonta grandis)
Paper Pond Shell (Anodonta imbecillus)
Rock Pocketbook (Arcidens confragosus)
W. Heel Splitter (Lasmigona complanata)
Squaw Foot (Strophitus undulatus)
Mucket (Actinonaias carinata)
Pocketbook (Lampsilis ventricosa)
Fat Mucket (L. radiata siliquoidea)
Yellow Sandshell (L. teres)
Higgin's Eye (L. Higginsi)
Fragile Paper Shell (Leptodea fragilis)
Pink Paper Shell (L. laevisissima)
Black Sand Shell (Ligumia recta)
3-Horned Warty Back (Obliquaria reflexa)
Hickory Nut (Obovaria olivaria)
Butterfly (Plagiola lineolata)
Pink Heel Splitter (Proptera alata) 1 small
Fawn's Foot (Truncilla donaciformis)
Deer Toe (T. truncata)
Spectacle-case (Cumberlandia monodonta)
Pleurobema sp.
Fat Pocketbook (Proptera capax)
Liliput (Toxolasma parvus)

Comments:

sand & mud mix flat
few rip rap chunks
light current (upstream)



Illinois

Date: 8-19-87

Mussel Survey
Lock 16

Sample Type Dive #2

Sample Location 1900' above wall; 750' from shore
(in-line w/ wall)
15' deep

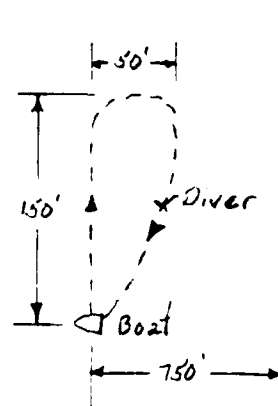
Species

Three Ridge (Amblema plicata)
Ebony Shell (Fusconaia ebenus)
Pig Toe (F. flava)
Washboard (Megaloniais nervosa)
Bullhead (Plethobasus cyphus)
Monkeyface (Quadrula metanevra)
Warty Back (Q. nodulata)
Pimple Back (Q. pustulosa)
Maple Leaf (Q. quadrula)
Floater (Anodonta grandis)
Paper Pond Shell (Anodonta imbecillus)
Rock Pocketbook (Arcidens confragosus)
W. Heel Splitter (Lasmigona complanata)
Squaw Foot (Strophitus undulatus)
Mucket (Actinonaias carinata)
Pocketbook (Lampsilis ventricosa)
Fat Mucket (L. radiata siliquoidea)
Yellow Sandshell (L. teres)
Higgin's Eye (L. Higginsi)
Fragile Paper Shell (Leptodea fragilis)
Pink Paper Shell (L. laevissima)
Black Sand Shell (Ligumia recta)
3-Horned Warty Back (Obliquaria reflexa)
Hickory Nut (Obovaria olivaria)
Butterfly (Plagiola lineolata)
Pink Heel Splitter (Proptera alata)
Fawn's Foot (Truncilla donaciformis)
Deer Toe (T. truncata)
Spectacle-case (Cumberlandia monodonta)
Pleurobema sp.
Fat Pocketbook (Proptera capax)
Liliput (Toxolasma parvus)

Nothing

Comments:

1" of mud over sand
No current
some scattered small rocks



Illinois

Date: 8-19-87

Mussel Survey
Lock 16

Sample Type Dive #3

Sample Location 1500' above wall, 450' from shore
16' deep

Species

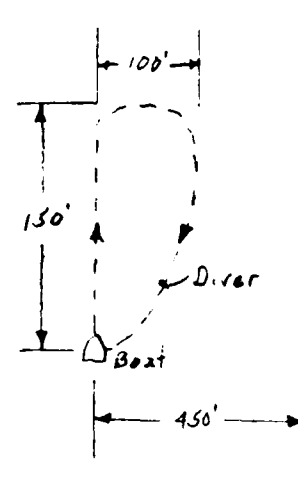
Three Ridge (Amblema plicata)
Ebony Shell (Fusconaia ebenus)
Pig Toe (F. flava)
Washboard (Megalonaias nervosa)
Bullhead (Plethobasus cyphus)
Monkeyface (Quadrula metanevra)
Warty Back (Q. nodulata)
Pimple Back (Q. pustulosa)
Maple Leaf (Q. quadrula)
Floater (Anodonta grandis)
Paper Pond Shell (Anodonta imbecillus)
Rock Pocketbook (Arcidens confragosus)
W. Heel Splitter (Lasmigona complanata)
Squaw Foot (Strophitus undulatus)
Mucket (Actinonaias carinata)
Pocketbook (Lampsilis ventricosa)
Fat Mucket (L. radiata siliquoidea)
Yellow Sandshell (L. teres)
Higgin's Eye (L. Higginsi)
Fragile Paper Shell (Leptodea fragilis)
Pink Paper Shell (L. laevissima)
Black Sand Shell (Ligumia recta)
3-Horned Warty Back (Obliquaria reflexa)
Hickory Nut (Obovaria olivaria)
Butterfly (Plagiola lineolata)
Pink Heel Splitter (Proptera alata)
Fawn's Foot (Truncilla donaciformis)
Deer Toe (T. truncata)
Spectacle-case (Cumberlandia monodonta)
Pleurobema sp.
Fat Pocketbook (Proptera cabax)
Liliput (Toxolasma parvus)

Nothing

Comments:

mud over sand

slight upstream current



Date: 8-19-87

Mussel Survey
Lock 16

Sample Type Dive #4

Sample Location 1200' from wall - 330' from shore
(in line w/ wall)
19' deep

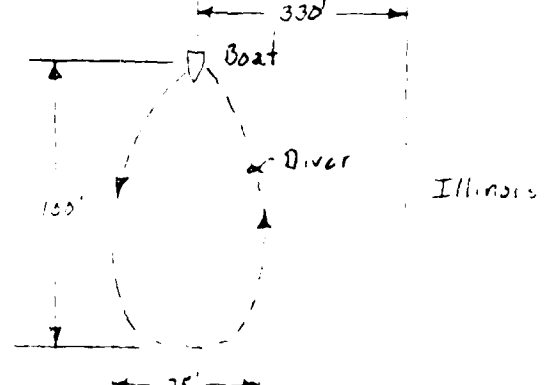
Species

Three Ridge (Amblema plicata)
Ebony Shell (Fusconaia ebenus)
Pig Toe (F. flava)
Washboard (Megalonaias nervosa)
Bullhead (Plethobasus cyphus)
Monkeyface (Quadrula metanevra)
Warty Back (Q. nodulata)
Pimple Back (Q. pustulosa)
Maple Leaf (Q. quadrula)
Floater (Anodonta grandis)
Paper Pond Shell (Anodonta imbecillus)
Rock Pocketbook (Arcidens confragosus)
W. Heel Splitter (Lasmigona complanata)
Squaw Foot (Strophitus undulatus)
Mucket (Actinonaias carinata)
Pocketbook (Lampsilis ventricosa)
Fat Mucket (L. radiata siligoidea)
Yellow Sandshell (L. teres)
Higgin's Eye (L. Higginsi)
Fragile Paper Shell (Leptodea fragilis)
Pink Paper Shell (L. laevisissima)
Black Sand Shell (Ligumia recta)
3-Horned Warty Back (Obliquaria reflexa)
Hickory Nut (Obovaria olivaria)
Butterfly (Plagiola lineolata)
Pink Heel Splitter (Proptera alata)
Fawn's Foot (Truncilla donaciformis)
Deer Toe (T. truncata)
Spectacle-case (Cumberlandia monodonta)
Pleurobema sp.
Fat Pocketbook (Proptera capax)
Liliput (Toxolasma parvus)

Nothing

Comments:

Mud bottom w/ small sand pockets
very slight current



Date: 8-19-87

Mussel Survey
Lock 16

Sample Type Dive #5

Sample Location 850' from wall, 200' from shore

(In-line w/ wall)
21' deep

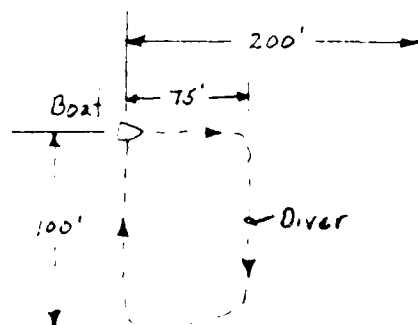
Species

Three Ridge (Amblema plicata)
Ebony Shell (Fusconaia ebenus)
Pig Toe (F. flava)
Washboard (Megalonaias nervosa)
Bullhead (Plethobasus cyphus)
Monkeyface (Quadrula metanevra)
Warty Back (Q. nodulata)
Pimple Back (Q. pustulosa)
Maple Leaf (Q. quadrula)
Floater (Anodonta grandis)
Paper Pond Shell (Anodonta imbecillus)
Rock Pocketbook (Arcidens confragosus)
W. Heel Splitter (Lasmigona complanata)
Squaw Foot (Strophitus undulatus)
Mucket (Actinonaias carinata)
Pocketbook (Lampsilis ventricosa)
Fat Mucket (L. radiata siliquoidea)
Yellow Sandshell (L. teres)
Higgin's Eye (L. Higginsi)
Fragile Paper Shell (Leptodea fragilis)
Pink Paper Shell (L. laevissima)
Black Sand Shell (Ligumia recta)
3-Horned Warty Back (Obliquaria reflexa)
Hickory Nut (Obovaria olivaria)
Butterfly (Plagiola lineolata)
Pink Heel Splitter (Proptera alata)
Fawn's Foot (Truncilla donaciformis)
Deer Toe (T. truncata)
Spectacle-case (Cumberlandia monodonta)
Pleurobema sp.
Fat Pocketbook (Proptera capax)
Liliput (Toxolasma parvus)

Nothing
=

Comments:

1/2" mud layer over hard sand
very slight current



Illinois

Date: 8-19-87

Mussel Survey
Lock 16

Sample Type Dive #6

Sample Location 600' above wall - 160' from shore
(50' towards Ill. from wall)
22' deep

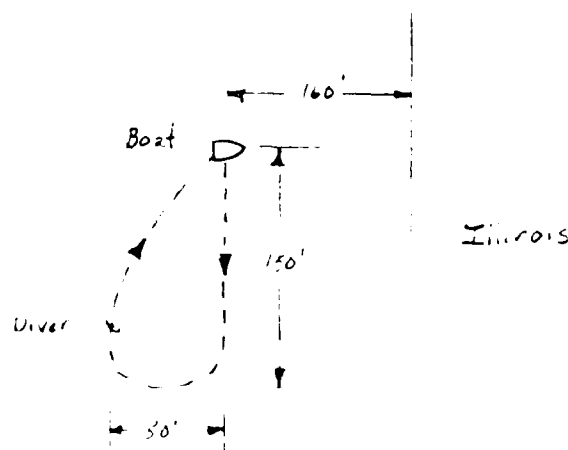
Species

Three Ridge (Amblema plicata) 1 Juv.
Ebony Shell (Fusconaia ebenus)
Pig Toe (F. flava)
Washboard (Megalonaias nervosa)
Bullhead (Plethobasus cyphus)
Monkeyface (Quadrula metanevra)
Warty Back (Q. nodulata)
Pimple Back (Q. pustulosa)
Maple Leaf (Q. quadrula)
Floater (Anodonta grandis)
Paper Pond Shell (Anodonta imbecillus)
Rock Pocketbook (Arcidens confragosus)
W. Heel Splitter (Lasmigona complanata)
Squaw Foot (Strophitus undulatus)
Mucket (Actinonaias carinata)
Pocketbook (Lampsilis ventricosa)
Fat Mucket (L. radiata siliquoidea)
Yellow Sandshell (L. teres)
Higgin's Eye (L. Higginsi)
Fragile Paper Shell (Leptodea fragilis) 1 Adult
Pink Paper Shell (L. laevissima) 1 Adult
Black Sand Shell (Ligumia recta)
3-Horned Warty Back (Obliquaria reflexa)
Hickory Nut (Obovaria olivaria)
Butterfly (Plagiola lineolata)
Pink Heel Splitter (Proptera alata)
Fawn's Foot (Truncilla donaciformis)
Deer Toe (T. truncata) 1 Adult
Spectacle-case (Cumberlandia monodonta)
Pleurobema sp.
Fat Pocketbook (Proptera capax)
Liliput (Toxolasma parvus)

Comments:

Mud w/ sand bottom

No current



Date: 8-19-87

Mussel Survey
Lock 16

Sample Type Dive # 7

Sample Location 350' from wall, 140' from shore
(in-line w/ wall)
18' deep

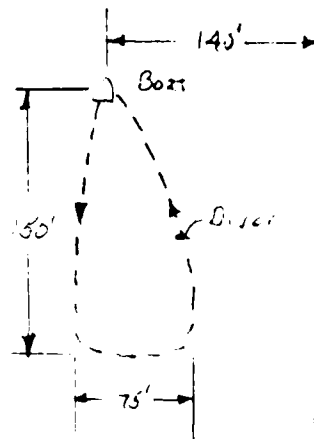
Species

Three Ridge (Amblema plicata)
Ebony Shell (Fusconaia ebenus)
Pig Toe (F. flava)
Washboard (Megaloniais nervosa)
Bullhead (Plethobasus cyphus)
Monkeyface (Quadrula metanevra)
Warty Back (Q. nodulata)
Pimple Back (Q. pustulosa)
Maple Leaf (Q. quadrula)
Floater (Anodonta grandis)
Paper Pond Shell (Anodonta imbecillus)
Rock Pocketbook (Arcidens confragosus)
W. Heel Splitter (Lasmigona complanata)
Squaw Foot (Strophitus undulatus)
Mucket (Actinonaias carinata)
Pocketbook (Lampsilis ventricosa)
Fat Mucket (L. radiata siliquoidea)
Yellow Sandshell (L. teres)
Higgin's Eye (L. Higginsi)
Fragile Paper Shell (Leptodea fragilis)
Pink Paper Shell (L. laevis)
Black Sand Shell (Ligumia recta)
3-Horned Warty Back (Obliquaria reflexa)
Hickory Nut (Obovaria olivaria)
Butterfly (Plagiola lineolata)
Pink Heel Splitter (Proptera alata) 2 Adult
Fawn's Foot (Truncilla donaciformis)
Deer Toe (T. truncata)
Spectacle-case (Cumberlandia monodonta)
Pleurobema sp.
Fat Pocketbook (Proptera cavax)
Liliput (Toxolasma parvus)

Comments:

Mud bottom

Very slight current



Date: 3-19-87

Mussel Survey
Lock 16

Sample Type Dive # 8

Sample Location 150' from wall, 100' from shore
(in-line w/ wall)
16' deep

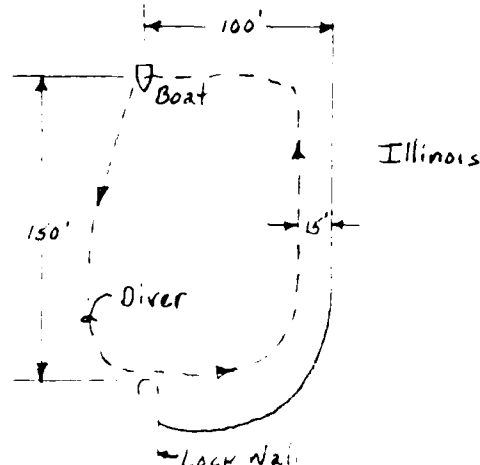
Species

Three Ridge (Amblema plicata)
Ebony Shell (Fusconaia ebenus)
Pig Toe (F. flava)
Washboard (Megaloniais nervosa)
Bullhead (Plethobasus cyphus)
Monkeyface (Quadrula metanevra)
Warty Back (Q. nodulata)
Pimple Back (Q. pustulosa)
Maple Leaf (Q. quadrula)
Floater (Anodonta grandis)
Paper Pond Shell (Anodonta imbecillus)
Rock Pocketbook (Arcidens confragosus)
W. Heel Splitter (Lasmigona complanata)
Squaw Foot (Strophitus undulatus)
Mucket (Actinonaias carinata)
Pocketbook (Lampsilis ventricosa)
Fat Mucket (L. radiata siliquoidea)
Yellow Sandshell (L. teres)
Higgin's Eye (L. Higginsi)
Fragile Paper Shell (Leptodea fragilis) / Adult
Pink Paper Shell (L. laevisissima)
Black Sand Shell (Ligumia recta)
3-Horned Warty Back (Obliquaria reflexa)
Hickory Nut (Obovaria olivaria)
Butterfly (Plagiola lineolata)
Pink Heel Splitter (Proptera alata)
Fawn's Foot (Truncilla donaciformis)
Deer Toe (T. truncata)
Spectacle-case (Cumberlandia monodonta)
Pleurobema sp.
Fat Pocketbook (Proptera capax)
Liliput (Toxolasma parvus)

Comments:

Sand bottom

No current



Date: 8-14-87

Mussel Survey
Lock 16

Sample Type Dive # 9

Sample Location 450' from wall, 80' from shore
12' deep

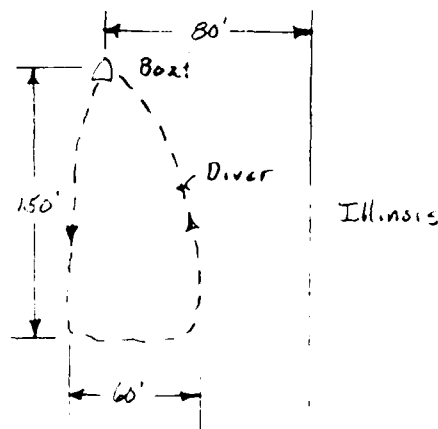
Species

Three Ridge (Amblema plicata)
Ebony Shell (Fusconaia ebenus)
Pig Toe (F. flava)
Washboard (Megaloniais nervosa)
Bullhead (Plethobasus cyphus)
Monkeyface (Quadrula metanevra)
Warty Back (Q. nodulata)
Pimple Back (Q. pustulosa)
Maple Leaf (Q. quadrula)
Floater (Anodonta grandis)
Paper Pond Shell (Anodonta imbecillus)
Rock Pocketbook (Arcidens confragosus)
W. Heel Splitter (Lasmigona complanata)
Squaw Foot (Strophitus undulatus)
Mucket (Actinonaias carinata)
Pocketbook (Lampsilis ventricosa)
Fat Mucket (L. radiata siliquoidea)
Yellow Sandshell (L. teres)
Higgin's Eye (L. Higginsi)
Fragile Paper Shell (Leptodea fragilis)
Pink Paper Shell (L. laevissima)
Black Sand Shell (Ligumia recta)
3-Horned Warty Back (Obliquaria reflexa)
Hickory Nut (Obovaria olivaria)
Butterfly (Plagiola lineolata)
Pink Heel Splitter (Proptera alata)
Fawn's Foot (Truncilla donaciformis)
Deer Toe (T. truncata)
Spectacle-case (Cumberlandia monodonta)
Pleurobema sp.
Fat Pocketbook (Proptera capax)
Liliput (Toxolasma parvus)

Nothing
3

Comments:

Mud & sand mixed



Date: 8-19-97

Mussel Survey
Lock 16

Sample Type Dive #10

Sample Location 800' from wall
100' from shore
17' deep

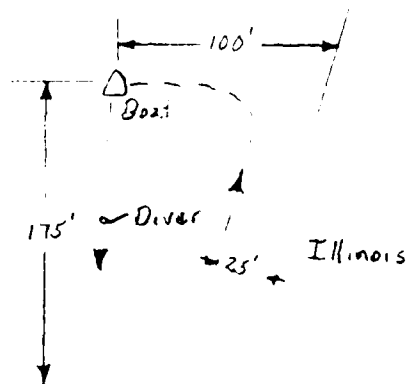
Species

Three Ridge (Amblema plicata)
Ebony Shell (Fusconaia ebenus)
Pig Toe (F. flava)
Washboard (Megaloniais nervosa)
Bullhead (Plethobasus cyphus)
Monkeyface (Quadrula metanevra)
Warty Back (Q. nodulata)
Pimple Back (Q. pustulosa)
Maple Leaf (Q. quadrula)
Floater (Anodonta grandis)
Paper Pond Shell (Anodonta imbecillus) 1 Adult
Rock Pocketbook (Arcidens confragosus)
W. Heel Splitter (Lasmigona complanata)
Squaw Foot (Strophitus undulatus)
Mucket (Actinonaias carinata)
Pocketbook (Lampsilis ventricosa)
Fat Mucket (L. radiata siliquoidea)
Yellow Sandshell (L. teres)
Higgin's Eye (L. Higginsi)
Fragile Paper Shell (Leptodea fragilis) 1 Juv.
Pink Paper Shell (L. laevisissima)
Black Sand Shell (Ligumia recta)
3-Horned Warty Back (Obliquaria reflexa)
Hickory Nut (Obovaria olivaria)
Butterfly (Plagiola lineolata)
Pink Heel Splitter (Proptera alata) 3 Juv.
Fawn's Foot (Truncilla donaciformis)
Deer Toe (T. truncata)
Spectacle-case (Cumberlandia monodonta)
Pleurobema sp.
Fat Pocketbook (Proptera capax)
Liliput (Toxolasma parvus)

Comments:

Sand & mud bottom

No current



Date: 8-19-27

Mussel Survey
Lock 16

Sample Type Dive #11

Sample Location 1200' from weir, 140' from shore
18' deep

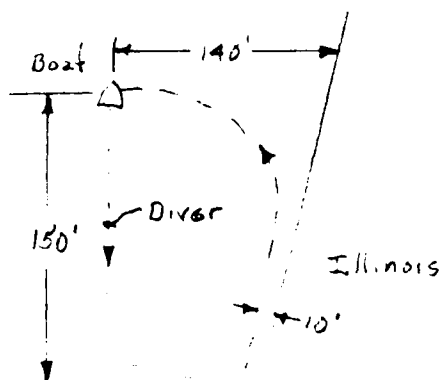
Species

Three Ridge (Amblema plicata)
Ebony Shell (Fusconaia ebenus)
Pig Toe (F. flava)
Washboard (Megalonaias nervosa)
Bullhead (Plethobasus cyphus)
Monkeyface (Quadrula metanevra)
Warty Back (Q. nodulata)
Pimple Back (Q. pustulosa)
Maple Leaf (Q. quadrula)
Floater (Anodonta grandis)
Paper Pond Shell (Anodonta imbecillus)
Rock Pocketbook (Arcidens confragosus)
W. Heel Splitter (Lasmigona complanata)
Squaw Foot (Strophitus undulatus)
Mucket (Actinonaias carinata)
Pocketbook (Lampsilis ventricosa)
Fat Mucket (L. radiata siliquoidea)
Yellow Sandshell (L. teres)
Higgin's Eye (L. Higginsi)
Fragile Paper Shell (Leptodea fragilis)
Pink Paper Shell (L. laevisissima)
Black Sand Shell (Ligumia recta)
3-Horned Warty Back (Obliquaria reflexa)
Hickory Nut (Obovaria olivaria)
Butterfly (Plagiola lineolata)
Pink Heel Splitter (Proptera alata)
Fawn's Foot (Truncilla donaciformis)
Deer Toe (T. truncata)
Spectacle-case (Cumberlandia monodonta)
Pleurobema sp.
Fat Pocketbook (Proptera capax)
Liliput (Toxolasma parvus)

Nothing

Comments:

rip-rap @ boat - then mostly sand
No current



Date: 8-20-87

Mussel Survey
Lock 16

Sample Type Dive #12

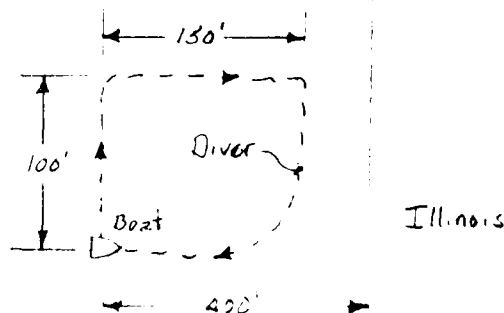
Sample Location 1900' from wall, 400' from shore
15' deep

Species

Three Ridge (Amblema plicata)
Ebony Shell (Fusconaia ebenus)
Pig Toe (F. flava)
Washboard (Megaloniais nervosa)
Bullhead (Plethobasus cyphus)
Monkeyface (Quadrula metanevra)
Warty Back (Q. nodulata)
Pimple Back (Q. pustulosa)
Maple Leaf (Q. quadrula)
Floater (Anodonta grandis)
Paper Pond Shell (Anodonta imbecillus)
Rock Pocketbook (Arcidens confragosus)
W. Heel Splitter (Lasmigona complanata)
Squaw Foot (Strophitus undulatus)
Mucket (Actinonaias carinata)
Pocketbook (Lampsilis ventricosa)
Fat Mucket (L. radiata siliquoidea)
Yellow Sandshell (L. teres)
Higgin's Eye (L. Higginsi)
Fragile Paper Shell (Leptodea fragilis) 1 Juv.
Pink Paper Shell (L. laevisissima)
Black Sand Shell (Ligumia recta)
3-Horned Warty Back (Obliquaria reflexa)
Hickory Nut (Obovaria olivaria)
Butterfly (Plagiola lineolata)
Pink Heel Splitter (Proptera alata) 1 Juv.
Fawn's Foot (Truncilla donaciformis)
Deer Toe (T. truncata)
Spectacle-case (Cumberlandia monodonta)
Pleurobema sp.
Fat Pocketbook (Proptera capax)
Liliput (Toxolasma parvus)

Comments:

Mud & Sand Bottom
Slight upstream current



Date: 8-20-87

Mussel Survey
Lock 16

Sample Type Dive #13

Sample Location 1600' from wall, 250' from shore
17' deep

Species

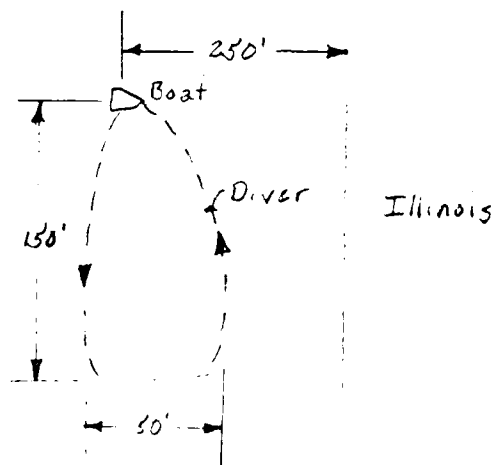
Three Ridge (Amblema plicata)
Ebony Shell (Fusconaia ebenus)
Pig Toe (F. flava)
Washboard (Megalonaias nervosa)
Bullhead (Plethobasus cyphus)
Monkeyface (Quadrula metanevra)
Warty Back (Q. nodulata)
Pimple Back (Q. pustulosa)
Maple Leaf (Q. quadrula)
Floater (Anodonta grandis)
Paper Pond Shell (Anodonta imbecillus)
Rock Pocketbook (Arcidens confragosus)
W. Heel Splitter (Lasmigona complanata)
Squaw Foot (Strophitus undulatus)
Mucket (Actinonaias carinata)
Pocketbook (Lampsilis ventricosa)
Fat Mucket (L. radiata siliquoidea)
Yellow Sandshell (L. teres)
Higgin's Eye (L. Higgin'si)
Fragile Paper Shell (Leptodea fragilis)
Pink Paper Shell (L. laevissima)
Black Sand Shell (Ligumia recta)
3-Horned Warty Back (Obliquaria reflexa)
Hickory Nut (Obovaria olivaria)
Butterfly (Plagiola lineolata)
Pink Heel Splitter (Proptera alata)
Fawn's Foot (Truncilla donaciformis)
Deer Toe (T. truncata)
Spectacle-case (Cumberlandia monodonta)
Pleurobema sp.
Fat Pocketbook (Proptera capax)
Liliput (Toxolasma parvus)

Nothing

Comments:

Mud over sand bottom

Vary little current



Date: 8-20-57

Mussel Survey
Lock 16

Sample Type Dive #14

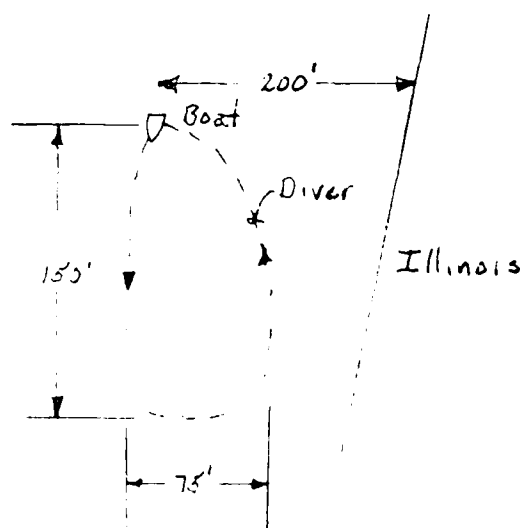
Sample Location 1000' from wall, 200' from shore
20' deep

Species

Three Ridge (Amblema plicata)
Ebony Shell (Fusconaia eburnus)
Pig Toe (F. flava)
Washboard (Megalonaias nervosa)
Bullhead (Plethobasus cyphus)
Monkeyface (Quadrula metanevra)
Warty Back (Q. nodulata)
Pimple Back (Q. pustulosa)
Maple Leaf (Q. quadrula)
Floater (Anodonta grandis)
Paper Pond Shell (Anodonta imbecillus)
Rock Pocketbook (Arcidens confragosus)
W. Heel Splitter (Lasmigona complanata)
Squaw Foot (Strophitus undulatus)
Mucket (Actinonaias carinata)
Pocketbook (Lampsilis ventricosa)
Fat Mucket (L. radiata siliquoidea)
Yellow Sandshell (L. teres)
Higgin's Eye (L. Higginsi)
Fragile Paper Shell (Leptodea fragilis)
Pink Paper Shell (L. laevis) 1 Juv.
Black Sand Shell (Ligumia recta)
3-Horned Warty Back (Obliquaria reflexa)
Hickory Nut (Obovaria olivaria)
Butterfly (Plagiola lineolata)
Pink Heel Splitter (Proptera alata) 1 Adult
Fawn's Foot (Truncilla donaciformis)
Deer Toe (T. truncata)
Spectacle-case (Cumberlandia monodonta)
Pleurobema sp.
Fat Pocketbook (Proptera capax)
Liliput (Toxolasma parvus)

Comments:

Mud bottom w/ sand beneath



Date: 8-20-87

Mussel Survey
Lock 16

Sample Type Dive #15

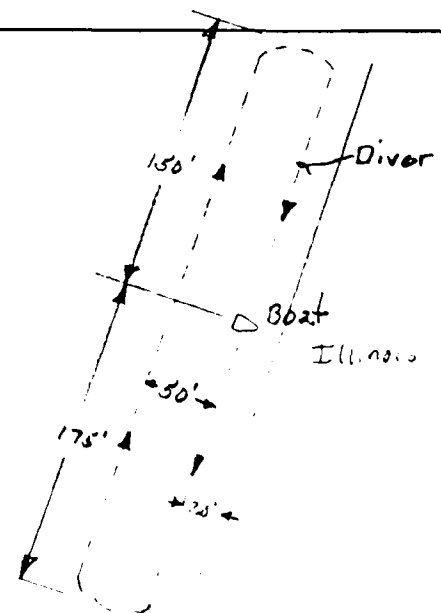
Sample Location 800' from wall, 20' from shore
6-10' deep

Species

Three Ridge (Amblema plicata)
Ebony Shell (Fusconaia ebenus)
Pig Toe (F. flava)
Washboard (Megalonaias nervosa) 1 small
Bullhead (Plethobasus cyphus)
Monkeyface (Quadrula metanevra)
Warty Back (Q. nodulata)
Pimple Back (Q. pustulosa)
Maple Leaf (Q. quadrula)
Floater (Anodonta grandis)
Paper Pond Shell (Anodonta imbecillus)
Rock Pocketbook (Arcidens confragosus)
W. Heel Splitter (Lasmigona complanata)
Squaw Foot (Strophitus undulatus)
Mucket (Actinonaias carinata)
Pocketbook (Lampsilis ventricosa)
Fat Mucket (L. radiata siliquoidea)
Yellow Sandshell (L. teres)
Higgin's Eye (L. Higginsi)
Fragile Paper Shell (Leptodea fragilis)
Pink Paper Shell (L. laevissima)
Black Sand Shell (Ligumia recta)
3-Horned Warty Back (Obliquaria reflexa)
Hickory Nut (Obovaria olivaria)
Butterfly (Plagiola lineolata)
Pink Heel Splitter (Proptera alata)
Fawn's Foot (Truncilla donaciformis)
Deer Toe (T. truncata)
Spectacle-case (Cumberlandia monodonta)
Pleurobema sp.
Fat Pocketbook (Proptera capax)
Liliput (Toxolasma parvus)

Comments:

rip-rap, sand, mud over sand
rip-rap near shore below boat
No current



Date: 8-20-87

Mussel Survey
Lock 16

Sample Type Oiva #16

Sample Location 1700' from wall, 150' from shore
18' deep

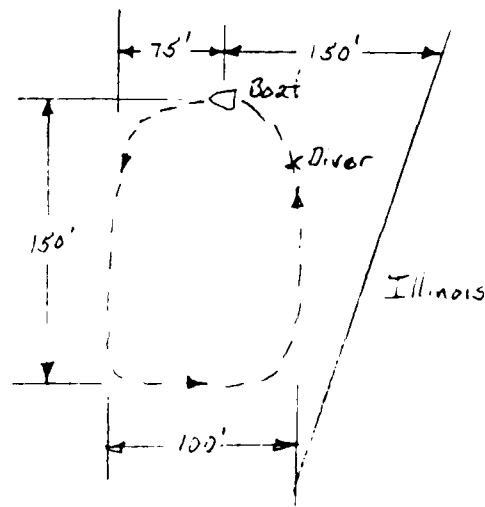
Species

Three Ridge (Amblema plicata)
Ebony Shell (Fusconaia ebenus)
Pig Toe (F. flava)
Washboard (Megalonaias nervosa)
Bullhead (Plethobasus cyphus)
Monkeyface (Quadrula metanevra)
Warty Back (Q. nodulata)
Pimple Back (Q. pustulosa)
Maple Leaf (Q. quadrula)
Floater (Anodonta grandis)
Paper Pond Shell (Anodonta imbecillus)
Rock Pocketbook (Arcidens confragosus)
W. Heel Splitter (Lasmigona complanata)
Squaw Foot (Strophitus undulatus)
Mucket (Actinonaias carinata)
Pocketbook (Lampsilis ventricosa)
Fat Mucket (L. radiata siliquoidea)
Yellow Sandshell (L. teres)
Higgin's Eye (L. Higginsi)
Fragile Paper Shell (Leptodea fragilis)
Pink Paper Shell (L. laevis)
Black Sand Shell (Ligumia recta)
3-Horned Warty Back (Obliquaria reflexa)
Hickory Nut (Obovaria olivaria)
Butterfly (Plagiola lineolata)
Pink Heel Splitter (Proptera alata)
Fawn's Foot (Truncilla donaciformis)
Deer Toe (T. truncata)
Spectacle-case (Cumberlandia monodonta)
Pleurobema sp.
Fat Pocketbook (Proptera canax)
Liliput (Toxolasma parvus)

Nothing

Comments:

Mud w/ sand bottom
very slight current



Date: 8-20-87

Mussel Survey
Lock 16

Sample Type Dive #17

Sample Location 1800' from wall, 500' from shore
15' deep

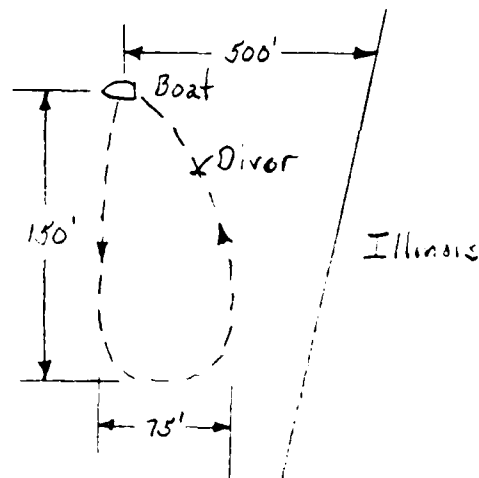
Species

Three Ridge (Amblema plicata)
Ebony Shell (Fusconaia ebenus)
Pig Toe (F. flava)
Washboard (Megaloniais nervosa)
Bullhead (Plethobasus cyphus)
Monkeyface (Quadrula metanevra)
Warty Back (Q. nodulata)
Pimple Back (Q. pustulosa)
Maple Leaf (Q. quadrula)
Floater (Anodonta grandis)
Paper Pond Shell (Anodonta imbecillus)
Rock Pocketbook (Arcidens confragosus)
W. Heel Splitter (Lasmigona complanata)
Squaw Foot (Strophitus undulatus)
Mucket (Actinonaias carinata)
Pocketbook (Lampsilis ventricosa)
Fat Mucket (L. radiata siliquoidea)
Yellow Sandshell (L. teres)
Higgin's Eye (L. Higginsi)
Fragile Paper Shell (Leptodea fragilis)
Pink Paper Shell (L. laevisima)
Black Sand Shell (Ligumia recta)
3-Horned Warty Back (Obliquaria reflexa)
Hickory Nut (Obovaria olivaria)
Butterfly (Plagiola lineolata)
Pink Heel Splitter (Proptera alata)
Fawn's Foot (Truncilla donaciformis)
Deer Toe (T. truncata)
Spectacle-case (Cumberlandia monodonta)
Pleurobema sp.
Fat Pocketbook (Proptera capax)
Liliput (Toxolasma parvus)

Nothing

Comments:

Mud over sand bottom



Date: 8-20-87

Mussel Survey
Lock 16

Sample Type Dive #18

Sample Location 1400' from wall, 140' from shore
12' deep

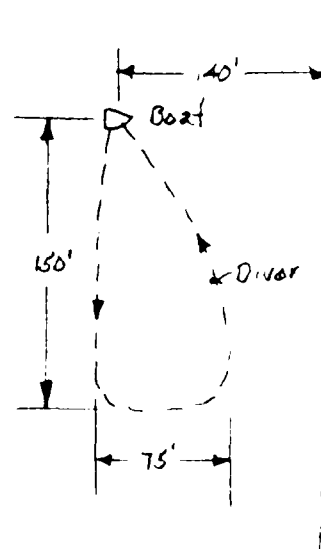
Species

Three Ridge (Amblema plicata)
Ebony Shell (Fusconaia ebenus)
Pig Toe (F. flava)
Washboard (Megalonaias nervosa)
Bullhead (Plethobasus cyphus)
Monkeyface (Quadrula metanevra)
Warty Back (Q. nodulata)
Pimple Back (Q. pustulosa)
Maple Leaf (Q. quadrula)
Floater (Anodonta grandis)
Paper Pond Shell (Anodonta imbecillus)
Rock Pocketbook (Arcidens confragosus)
W. Heel Splitter (Lasmigona complanata)
Squaw Foot (Strophitus undulatus)
Mucket (Actinonaias carinata)
Pocketbook (Lampsilis ventricosa)
Fat Mucket (L. radiata siliquoidea)
Yellow Sandshell (L. teres)
Higgin's Eye (L. Higginsi)
Fragile Paper Shell (Leptodea fragilis)
Pink Paper Shell (L. laevissima)
Black Sand Shell (Ligumia recta)
3-Horned Warty Back (Obliquaria reflexa)
Hickory Nut (Obovaria olivaria)
Butterfly (Plagiola lineolata)
Pink Heel Splitter (Proptera alata)
Fawn's Foot (Truncilla donaciformis)
Deer Toe (T. truncata)
Spectacle-case (Cumberlandia monodonta)
Pleurobema sp.
Fat Pocketbook (Proptera capax)
Liliput (Toxolasma parvus)

Nothing

Comments:

Mud over sand
Some small rip-rap (scattered)



Date: 8-20-87

Mussel Survey
Lock 16

Sample Type Dive #19

Sample Location 145' from wall, 300' from shore
15' deep

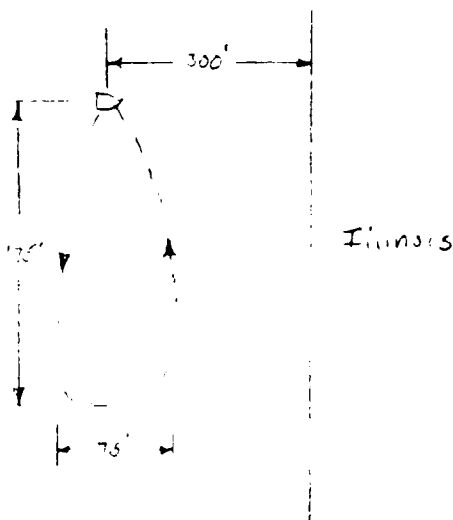
Species

Three Ridge (Amblema plicata)
Ebony Shell (Fusconaia ebenus)
Pig Toe (F. flava)
Washboard (Megalonaias nervosa)
Bullhead (Plethobasus cyphus)
Monkeyface (Quadrula metanevra)
Warty Back (Q. nodulata)
Pimple Back (Q. pustulosa)
Maple Leaf (Q. quadrula)
Floater (Anodonta grandis)
Paper Pond Shell (Anodonta imbecillus)
Rock Pocketbook (Arcidens confragosus)
W. Heel Splitter (Lasmigona complanata)
Squaw Foot (Strophitus undulatus)
Mucket (Actinonaias carinata)
Pocketbook (Lampsilis ventricosa)
Fat Mucket (L. radiata siligoidea)
Yellow Sandshell (L. teres)
Higgin's Eye (L. Higginsi)
Fragile Paper Shell (Leptodea fragilis)
Pink Paper Shell (L. laevissima)
Black Sand Shell (Ligumia recta)
3-Horned Warty Back (Obliquaria reflexa)
Hickory Nut (Obovaria olivaria)
Butterfly (Plagiola lineolata)
Pink Heel Splitter (Proptera alata)
Fawn's Foot (Truncilla donaciformis)
Deer Toe (T. truncata)
Spectacle-case (Cumberlandia monodonta)
Pleurobema sp.
Fat Pocketbook (Proptera capax)
Liliput (Toxolasma parvus)

Nothing

Comments:

Mud over sand bottom
Vary little current



Date: 8-24-87

Mussel Survey
Lock 17

Sample Type Dive #1
1st anchorage

Sample Location 2000' from wall, 100' from shore
26' deep

Species

Three Ridge (*Amblema plicata*) 6 Adults
Ebony Shell (*Fusconaia ebenus*)
Pig Toe (*F. flava*)
Washboard (*Megalonaias nervosa*)
Bullhead (*Plethobasus cyphus*)
Monkeyface (*Quadrula metanevra*) 1 Adult
Warty Back (*Q. nodulata*) 2 Adults
Pimple Back (*Q. pustulosa*) 10 Adult, 3 small
Maple Leaf (*Q. quadrula*) 4 Adult
Floater (*Anodonta grandis*) 1 Adult
Paper Pond Shell (*Anodonta imbecillus*)
Rock Pocketbook (*Arcidens confragosus*)
W. Heel Splitter (*Lasmigona complanata*)
Squaw Foot (*Strophitus undulatus*)
Mucket (*Actinonaias carinata*)
Pocketbook (*Lampsilis ventricosa*) 4 Adult
Fat Mucket (*L. radiata siliquoidea*)
Yellow Sandshell (*L. teres*)
Higgin's Eye (*L. Higginsi*)
Fragile Paper Shell (*Leptodea fragilis*) 4 Adult + 2 Juv.
Pink Paper Shell (*L. laevis*) 1 small
Black Sand Shell (*Ligumia recta*)
3-Horned Warty Back (*Obliquaria reflexa*) 1 Adult
Hickory Nut (*Obovaria olivaria*) 17 Adult
Butterfly (*Plagiola lineolata*)
Pink Heel Splitter (*Proptera alata*) 1 Adult
Fawn's Foot (*Truncilla donaciformis*) 1 Adult
Deer Toe (*T. truncata*) 11 Adult
Spectacle-case (*Cumberlandia monodonta*)
Pleurobema sp.
Fat Pocketbook (*Proptera canax*)
Liliput (*Toxolasma parvus*)

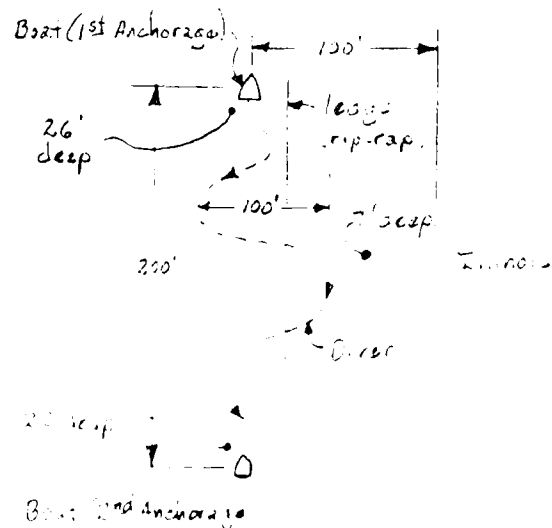
1 m² sample
many subadults / juveniles
78 whole shells
71 1/2
14 species

Comments:

- Boat over rip-rap bank
- Mud at base of slope is 3'-6' up slope
- 6' wide mud depression at base of slope
- fine, hard packed sand & rocks of mud
- mud over rip-rap on top of bank (few clams)
- clean rip-rap on slope w/ scattered old shells

more records from 1 mi sample (1980 & 81 and 1982 - 83)

Boat continues to 15' depth at 15' from shore
but remains throughout = 40-100 m



Date: 2-24-87

Mussel Survey
Lock 17

Sample Type Dive #1 (cont'd.)
2nd anchorage

Sample Location .800' from wall, 100' from shore
23' deep

Species

Three Ridge (Amblema plicata) 5 Adult
Ebony Shell (Fusconaia ebenus)
Pig Toe (F. flava) 2 Adult
Washboard (Megalonaias nervosa) 4 Adult
Bullhead (Plethobasus cyphus)
Monkeyface (Quadrula metanevra)
Warty Back (Q. nodulata)
Pimple Back (Q. pustulosa) 2 Adult
Maple Leaf (Q. quadrula) 5 Adult
Floater (Anodonta grandis) 1 Adult
Paper Pond Shell (Anodonta imbecillus)
Rock Pocketbook (Arcidens confragosus)
W. Heel Splitter (Lasmigona complanata)
Squaw Foot (Strophitus undulatus)
Mucket (Actinonaias carinata)
Pocketbook (Lampsilis ventricosa)
Fat Mucket (L. radiata siliquoidea)
Yellow Sandshell (L. teres)
Higgin's Eye (L. Higginsi)
Fragile Paper Shell (Leptodea fragilis) 7 Adult
Pink Paper Shell (L. laevissima) 2 Adult
Black Sand Shell (Ligumia recta)
3-Horned Warty Back (Obliquaria reflexa) 2 Adult
Hickory Nut (Obovaria olivaria) 1 Adult
Butterfly (Plagiola lineolata) 3 Adult
Pink Heel Splitter (Proptera alata) 1 Adult
Fawn's Foot (Truncilla donaciformis) 1 Adult
Deer Toe (T. truncata) 3 Adult
Spectacle-case (Cumberlandia monodonta)
Pleurobema sp.
Fat Pocketbook (Proptera capax)
Liliput (Toxolasma parvus)

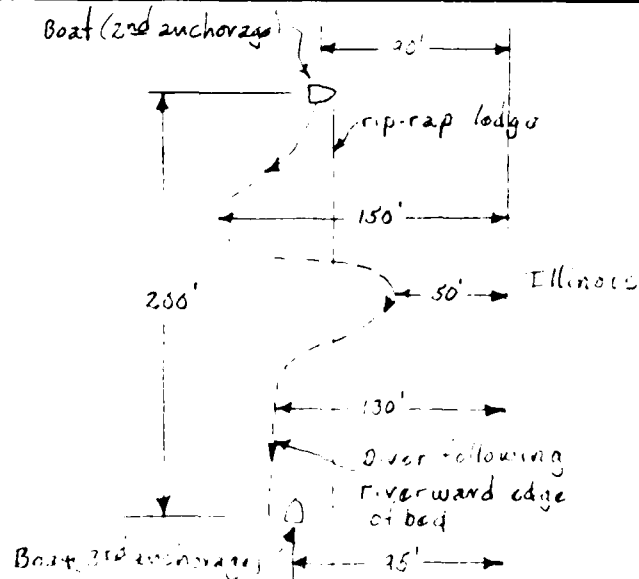
1 m² sample

many subfossil valves
21 whole dead
44 live
14 species

Comments:

Boat over sloped bank
Substrate same as previous anchorage
Clam bed same location - same dimensions

Above results from 1 m² sample (approx.)
@ 2nd anchorage (at boat)



Date: 8-24-97

Mussel Survey
Lock 17

Sample Type Dive #1 (cont's) Sample Location 1600' from wall, 95' from shore
3rd anchorage 23' deep

Species

Three Ridge (Amblema plicata) 3 (72, 39, 34 mm)
Ebony Shell (Fusconaia ebenus)
Pig Toe (F. flava)
Washboard (Megalonaias nervosa)
Bullhead (Plethobasus cyphus)
Monkeyface (Quadrula metanevra)
Warty Back (Q. nodulata)
Pimple Back (Q. pustulosa) 4 (60, 58, 49, 43 mm)
Maple Leaf (Q. quadrula) 3 (45, 37, 36 mm)
Floater (Anodonta grandis) 1 (130 mm)
Paper Pond Shell (Anodonta imbecillus)
Rock Pocketbook (Arcidens confragosus)
W. Heel Splitter (Lasmigona complanata)
Squaw Foot (Strophitus undulatus)
Mucket (Actinonaias carinata)
Pocketbook (Lampsilis ventricosa) 1 (116 mm)
Fat Mucket (L. radiata siliquioidea)
Yellow Sandshell (L. teres)
Higgin's Eye (L. Higgin'si)
Fragile Paper Shell (Leptodea fragilis)
Pink Paper Shell (L. laevisissima) 1 (114 mm)
Black Sand Shell (Ligumia recta)
3-Horned Warty Back (Obliquaria reflexa) 2 (50, 46 mm)
Hickory Nut (Obovaria olivaria) 6 (73, 65, 55, 51, 45, 40 mm)
Butterfly (Plagiola lineolata)
Pink Heel Splitter (Proptera alata)
Fawn's Foot (Truncilla donaciformis)
Deer Toe (T. truncata) 7 (57, 44, 40, 37, 37, 30, 26 mm)
Spectacle-case (Cumberlandia monodonta)
Pleurobema sp.
Fat Pocketbook (Proptera capax)
Liliput (Toxolasma parvus)

$\frac{1}{4} m^2$ quadrat sample

many subfossil valves

11 dead whole

28 live

9 species

$28 \times 4 = 112/m^2$

Comments:

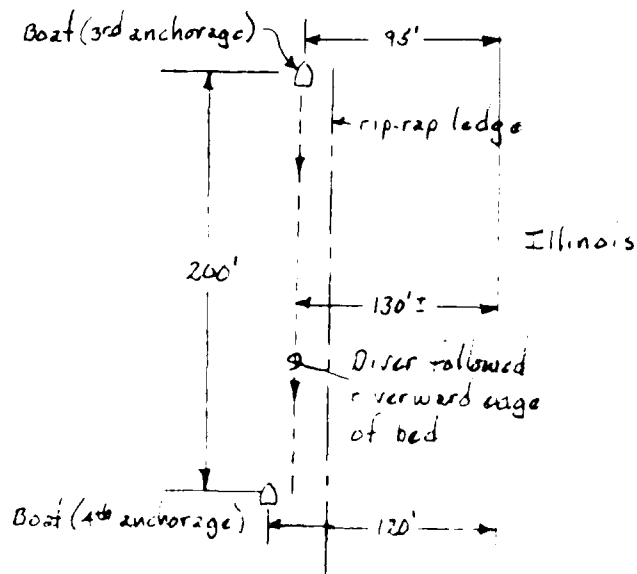
Boat over slope

Substrates same

Clam bed same size - same location

Densities less in several locations

Above results from $\frac{1}{4} m^2$ quadrat sample
@ 3rd anchorage (@ boat)



Date: 2-24-87

Mussel Survey
Lock 17Sample Type Dive #1 (cont'd.) Sample Location 1400' from wall, 120' from shore
4th Anchorage 25' azep

Species

Three Ridge (<i>Amblema plicata</i>)	4	(97, 95, 90, 56 mm)	
Ebony Shell (<i>Fusconaia ebenus</i>)			
Pig Toe (<i>F. flava</i>)	1	(39 mm)	
Washboard (<i>Megalonaias nervosa</i>)			
Bullhead (<i>Plethobasus cyphus</i>)			
Monkeyface (<i>Quadrula metanevra</i>)			
Warty Back (<i>Q. nodulata</i>)			
Pimple Back (<i>Q. pustulosa</i>)	8	(66, 63, 60, 58, 53, 49, 40, 37 mm)	
Maple Leaf (<i>Q. quadrula</i>)	2	(82, 80 mm)	
Floater (<i>Anodonta grandis</i>)			
Paper Pond Shell (<i>Anodonta imbecillus</i>)			
Rock Pocketbook (<i>Arcidens confragosus</i>)			
W. Heel Splitter (<i>Lasmigona complanata</i>)			
Squaw Foot (<i>Strophitus undulatus</i>)			
Mucket (<i>Actinonaias carinata</i>)			
Pocketbook (<i>Lampsilis ventricosa</i>)			
Fat Mucket (<i>L. radiata siliquoidea</i>)			
Yellow Sandshell (<i>L. teres</i>)			
Higgin's Eye (<i>L. Higginsi</i>)			
Fragile Paper Shell (<i>Leptodea fragilis</i>)	1	(47 mm)	
Pink Paper Shell (<i>L. laevissima</i>)			
Black Sand Shell (<i>Ligumia recta</i>)			
3-Horned Warty Back (<i>Obliquaria reflexa</i>)	3	(64, 36, 33 mm)	
Hickory Nut (<i>Obovaria olivaria</i>)			
Butterfly (<i>Plagiola lineolata</i>)	1	(75 mm)	
Pink Heel Splitter (<i>Proptera alata</i>)			
Fawn's Foot (<i>Truncilla donaciformis</i>)	1	(26 mm)	
Deer Toe (<i>T. truncata</i>)	8	(55, 55, 50, 50, 38, 33, 25, 21 mm)	
Spectacle-case (<i>Cumberlandia monodonta</i>)			
Pleurobema sp.			
Fat Pocketbook (<i>Proptera capax</i>)			
Liliput (<i>Toxolasma parvus</i>)			

1/4 m² quadrat sample

many subtidal valves

19 dead shells

29 live

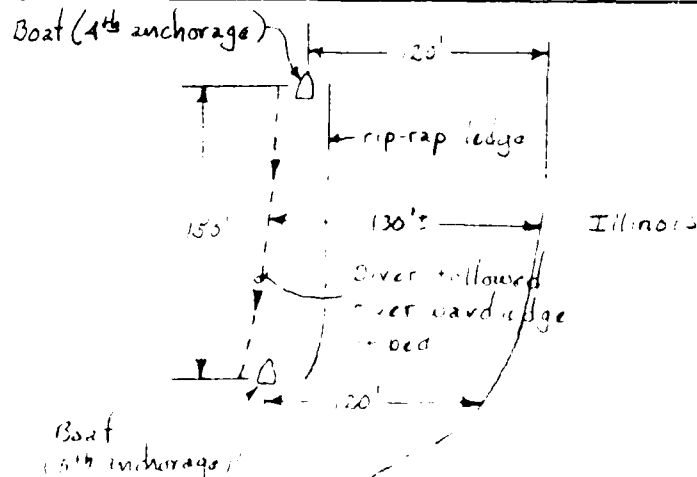
9 species

29 x 4 = 116 / m²

Comments:

Boat over slope
substrates same
clam bed same size & location

Above results from 1/4 m² quadrat sample
@ 4th anchorage (at boat)



Date: 8-24-87

Mussel Survey
Lock 17

Sample Type Dive #1 (cont'd.) Sample Location 1250' from wall, 120' from shore
5th anchorage 20' deep

Species

Three Ridge (Amblema plicata) 1 (72 mm)

Ebony Shell (Fusconaia ebenus)

Pig Toe (F. flava)

Washboard (Megalonaias nervosa)

Bullhead (Plethobasus cyphus)

Monkeyface (Quadrula metanevra)

Warty Back (Q. nodulata)

Pimple Back (Q. pustulosa) 4 (70, 62, 60, 47 mm)

Maple Leaf (Q. quadrula)

Floater (Anodonta grandis)

Paper Pond Shell (Anodonta imbecillus)

Rock Pocketbook (Arcidens confragosus)

W. Heel Splitter (Lasmigona complanata)

Squaw Foot (Strophitus undulatus)

Mucket (Actinonaias carinata)

Pocketbook (Lampsilis ventricosa)

Fat Mucket (L. radiata siliquioidea)

Yellow Sandshell (L. teres)

Higgin's Eye (L. Higginsi)

Fragile Paper Shell (Leptodea fragilis)

Pink Paper Shell (L. laevissima)

Black Sand Shell (Ligumia recta)

3-Horned Warty Back (Obliquaria reflexa)

Hickory Nut (Obovaria olivaria) 1 (60 mm)

Butterfly (Plagiola lineolata)

Pink Heel Splitter (Proptera alata)

Fawn's Foot (Truncilla donaciformis) 1 (24 mm)

Deer Toe (T. truncata) 11 (52, 48, 45, 44, 41, 38, 35, 26, 25, 20, 16 mm)

Spectacle-case (Cumberlandia monodonta)

Pleurobema sp.

Fat Pocketbook (Proptera capax)

Liliput (Toxolasma parvus)

$\frac{1}{4} m^2$ quadrat sample

Mostly subtidal valves

5 dead whole

18 live

5 species

$18 \times 4 = 72 / m^2$

Comments:

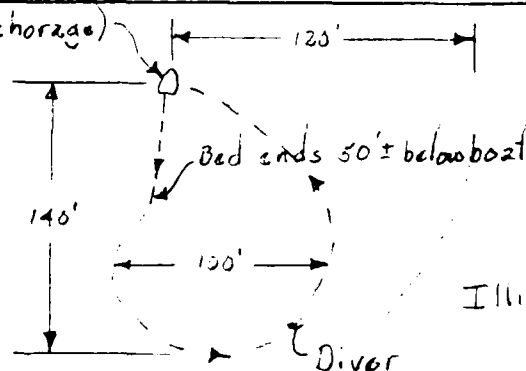
Fine sand below & downstream of boat

rip rap toward shore

Clams become sparse 50' below boat

Above results from $\frac{1}{4} m^2$ quadrat sample
@ 5th anchorage (at boat)

Boat (5th anchorage)



Date: 8-24-87

Mussel Survey
Lock 17

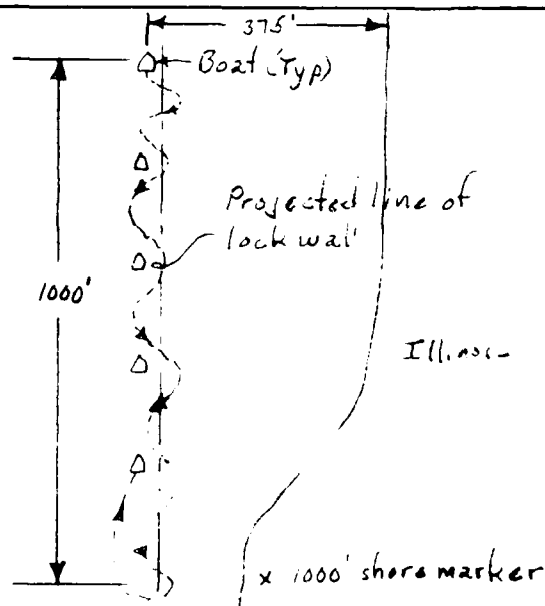
Sample Type Dive # 2 Sample Location 2000' from wall, 375' from shore
Drift Dive 24' deep

Species

Three Ridge (Amblema plicata)
Ebony Shell (Fusconaia ebenus)
Pig Toe (F. flava)
Washboard (Megalonaias nervosa)
Bullhead (Plethobasus cyphus)
Monkeyface (Quadrula metanevra)
Warty Back (Q. nodulata)
Pimple Back (Q. pustulosa)
Maple Leaf (Q. quadrula)
Floater (Anodonta grandis)
Paper Pond Shell (Anodonta imbecillus)
Rock Pocketbook (Arcidens confragosus)
W. Heel Splitter (Lasmigona complanata)
Squaw Foot (Strophitus undulatus)
Mucket (Actinonaias carinata)
Pocketbook (Lampsilis ventricosa)
Fat Mucket (L. radiata siliquoidea)
Yellow Sandshell (L. teres)
Higgin's Eye (L. Higginsi)
Fragile Paper Shell (Leptodea fragilis) 1 Adult
Pink Paper Shell (L. laevisima) 1 Juv.
Black Sand Shell (Ligumia recta)
3-Horned Warty Back (Obliquaria reflexa) 1 Adult
Hickory Nut (Obovaria olivaria) 1 Small
Butterfly (Plagiola lineolata)
Pink Heel Splitter (Proptera alata) 1 Small
Fawn's Foot (Truncilla donaciformis)
Deer Toe (T. truncata)
Spectacle-case (Cumberlandia monodonta)
Pleurobema sp.
Fat Pocketbook (Proptera capax)
Liliput (Toxolasma parvus)

Comments:

Long drift dive w/ multiple anchorages
Diver followed "zig-zag" pattern along
projected line of rock wall
Fairly strong current
Bottom constant pure sand
Diver drifted through several
deeper depressions w/ mud & debris bottoms
Clams found in depressions - nothing in sand
Depths: 22 28'



Date: 2-27-87

Mussel Survey
Lock 17

Sample Type Dive #3

Sample Location 1000' above wall - in line w/ wall
40' from shore
18' deep

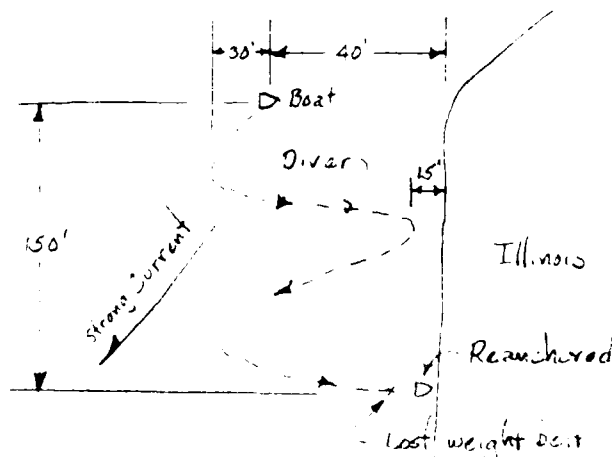
Species

Three Ridge (Amblema plicata)
Ebony Shell (Fusconaia ebenus)
Pig Toe (F. flava)
Washboard (Megalonaias nervosa)
Bullhead (Plethobasus cyphus)
Monkeyface (Quadrula metanevra)
Warty Back (Q. nodulata)
Pimple Back (Q. pustulosa)
Maple Leaf (Q. quadrula)
Floater (Anodonta grandis)
Paper Pond Shell (Anodonta imbecillus)
Rock Pocketbook (Arcidens confragosus)
W. Heel Splitter (Lasmigona complanata)
Squaw Foot (Strophitus undulatus)
Mucket (Actinonaias carinata)
Pocketbook (Lampsilis ventricosa)
Fat Mucket (L. radiata siliquoidea)
Yellow Sandshell (L. teres)
Higgin's Eye (L. Higginsii)
Fragile Paper Shell (Leptodea fragilis)
Pink Paper Shell (L. laevissima)
Black Sand Shell (Ligumia recta)
3-Horned Warty Back (Obliquaria reflexa)
Hickory Nut (Obovaria olivaria)
Butterfly (Plagiola lineolata)
Pink Heel Splitter (Proptera alata)
Fawn's Foot (Truncilla donaciformis)
Deer Toe (T. truncata)
Spectacle-case (Cumberlandia monodonta)
Pleurobema sp.
Fat Pocketbook (Proptera capax)
Liliput (Toxolasma parvus)

Nothing

Comments:

Rip-rap bottom
few small sand & gravel pockets
Strong current



Date: 8.27.87

Mussel Survey
Lock 17

Sample Type Dive # 4

Sample Location 850' above wall; @ shore

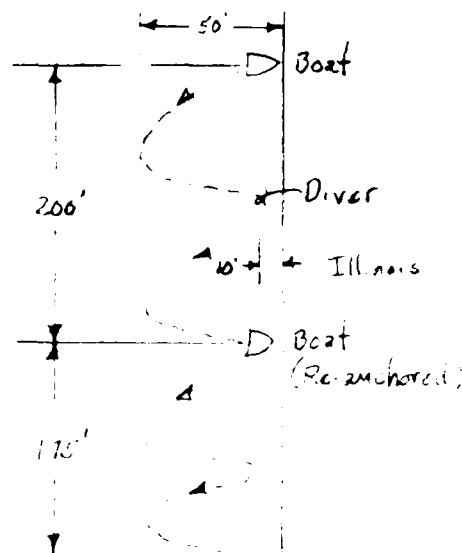
Species

Three Ridge (Amblema plicata)
Ebony Shell (Fusconaia ebenus)
Pig Toe (F. flava)
Washboard (Megalonaias nervosa)
Bullhead (Plethobasus cyphus)
Monkeyface (Quadrula metanevra)
Warty Back (Q. nodulata)
Pimple Back (Q. pustulosa)
Maple Leaf (Q. quadrula)
Floater (Anodonta grandis)
Paper Pond Shell (Anodonta imbecillus)
Rock Pocketbook (Arcidens confragosus)
W. Heel Splitter (Lasmigona complanata)
Squaw Foot (Strophitus undulatus)
Mucket (Actinonaias carinata)
Pocketbook (Lampsilis ventricosa)
Fat Mucket (L. radiata siliquoidea)
Yellow Sandshell (L. teres)
Higgin's Eye (L. Higginsi)
Fragile Paper Shell (Leptodea fragilis)
Pink Paper Shell (L. laevissima)
Black Sand Shell (Ligumia recta)
3-Horned Warty Back (Obliquaria reflexa)
Hickory Nut (Obovaria olivaria)
Butterfly (Plagiola lineolata)
Pink Heel Splitter (Proptera alata)
Fawn's Foot (Truncilla donaciformis)
Deer Toe (T. truncata)
Spectacle-case (Cumberlandia monodonta)
Pleurobema sp.
Fat Pocketbook (Proptera cavax)
Liliput (Toxolasma parvus)

Nothing

Comments:

All rip-rap
Light Current



Date: 5-27-37

Mussel Survey
Lock 17

Sample Type Dive #5

Sample Location 200' above wall; E end of sheet piling
25' from shore
8' deep

Species

Three Ridge (Amblema plicata)
Ebony Shell (Fusconaia ebenus)
Pig Toe (F. flava)
Washboard (Megalonaias nervosa)
Bullhead (Plethobasus cyphus)
Monkeyface (Quadrula metanevra)
Warty Back (Q. nodulata)
Pimple Back (Q. pustulosa)
Maple Leaf (Q. quadrula)
Floater (Anodonta grandis)
Paper Pond Shell (Anodonta imbecillus)
Rock Pocketbook (Arcidens confragosus)
W. Heel Splitter (Lasmigona complanata)
Squaw Foot (Strophitus undulatus)
Mucket (Actinonaias carinata)
Pocketbook (Lampsilis ventricosa)
Fat Mucket (L. radiata siliguoidea)
Yellow Sandshell (L. teres)
Higgin's Eye (L. Higginsi)
Fragile Paper Shell (Leptodea fragilis)
Pink Paper Shell (L. laevissima)
Black Sand Shell (Ligumia recta)
3-Horned Warty Back (Obliquaria reflexa)
Hickory Nut (Obovaria olivaria)
Butterfly (Plagiola lineolata)
Pink Heel Splitter (Proptera alata)
Fawn's Foot (Truncilla donaciformis)
Deer Toe (T. truncata)
Spectacle-case (Cumberlandia monodonta)
Pleurobema sp.
Fat Pocketbook (Proptera capax)
Liliput (Toxolasma parvus)

Nothing

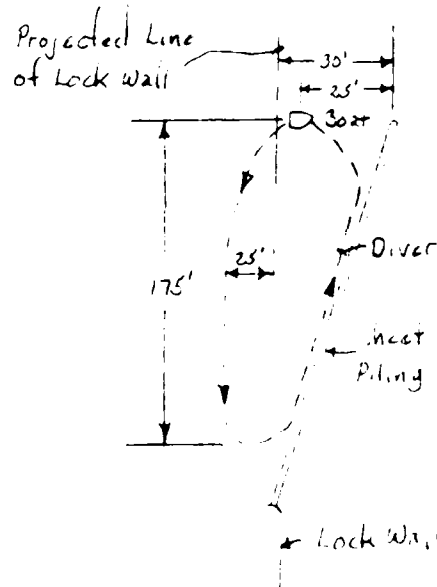
Comments:

Bottom: coarse sand w/ scattered rip-rap

No Current

Small piles of 1' Dia rip-rap w/ sand between

Depressed "trench" along sheet pile wall



Date: B-27-87

Mussel Survey
Lock 17

Sample Type Dive #6
500' drift

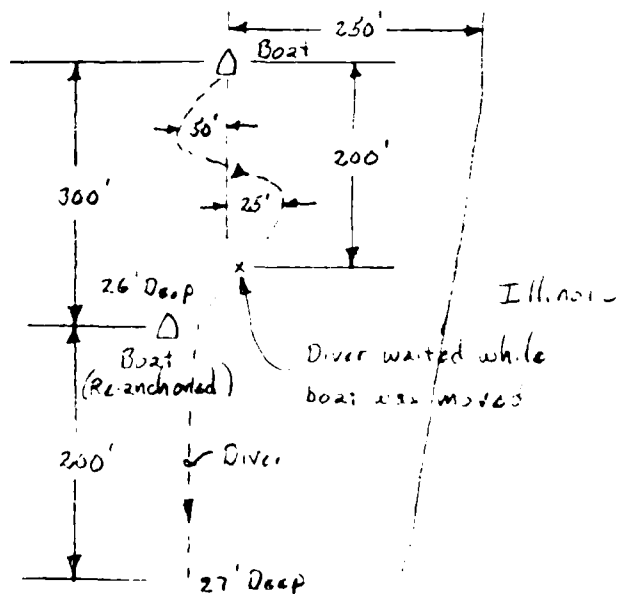
Sample Location 2000' above wall
250' from shore
25' deep

Species

Three Ridge (Amblema plicata)
Ebony Shell (Fusconaia ebenus)
Pig Toe (F. flava)
Washboard (Megalonaias nervosa)
Bullhead (Plethobasus cyphus)
Monkeyface (Quadrula metanevra)
Warty Back (Q. nodulata)
Pimple Back (Q. pustulosa)
Maple Leaf (Q. quadrula)
Floater (Anodonta grandis)
Paper Pond Shell (Anodonta imbecillus)
Rock Pocketbook (Arcidens confragosus)
W. Heel Splitter (Lasmigona complanata)
Squaw Foot (Strophitus undulatus)
Mucket (Actinonaias carinata)
Pocketbook (Lampsilis ventricosa) 1 Adult
Fat Mucket (L. radiata siliquoidea)
Yellow Sandshell (L. teres)
Higgin's Eye (L. Higginsi)
Fragile Paper Shell (Leptodea fragilis) 1 small
Pink Paper Shell (L. laevissima) 2 small
Black Sand Shell (Ligumia recta)
3-Horned Warty Back (Obliquaria reflexa)
Hickory Nut (Obovaria olivaria)
Butterfly (Plagiola lineolata)
Pink Heel Splitter (Proptera alata)
Fawn's Foot (Truncilla donaciformis)
Deer Toe (T. truncata)
Spectacle-case (Cumberlandia monodonta)
Pleurobema sp.
Fat Pocketbook (Proptera capax)
Liliput (Toxolasma parvus)

Comments:

Rippled Sand Bottom
Strong Current
Small areas of gravel
Several deeper depressions
w/ gravel & debris



Date: 8-27-67

Mussel Survey
Lock 17

Sample Type Dive # 7 Sample Location 1525' from wall; 110' from shore
1/4 m² quadrat sample 24' deep

Species

Three Ridge (Amblema plicata) 1 (98 mm)
Ebony Shell (Fusconaia ebenus)
Pig Toe (F. flava) 2 (70, 65 mm)
Washboard (Megaloniaia nervosa)
Bullhead (Plethobasus cyphus)
Monkeyface (Quadrula metanevra)
Warty Back (Q. nodulata) 2 (70, 52 mm)
Pimple Back (Q. pustulosa) 10 (70, 60, 60, 60, 45, 43, 38, 36, 36, 27 mm)
Maple Leaf (Q. quadrula) 4 (85, 83, 52, 48 mm)
Floater (Anodonta grandis)
Paper Pond Shell (Anodonta imbecillus)
Rock Pocketbook (Arcidens confragosus) 1 (88 mm)
W. Heel Splitter (Lasmigona complanata)
Squaw Foot (Strophitus undulatus)
Mucket (Actinonaias carinata)
Pocketbook (Lampsilis ventricosa)
Fat Mucket (L. radiata siliquoidea)
Yellow Sandshell (L. teres)
Higgin's Eye (L. Higginsi)
Fragile Paper Shell (Leptodea fragilis) 10 (87, 85, 84, 77, 66, 64, 63, 43, 40, 19 mm)
Pink Paper Shell (L. laevisissima) 2 (78, 61 mm)
Black Sand Shell (Ligumia recta)
3-Horned Warty Back (Obliquaria reflexa)
Hickory Nut (Obovaria olivaria)
Butterfly (Plagiola lineolata) 1 (75 mm)
Pink Heel Splitter (Proptera alata)
Fawn's Foot (Truncilla donaciformis) 3 (28, 9, 7 mm)
Deer Toe (T. truncata) 17 (50, 49, 48, 47, 45, 43, 42, 42, 40, 40, 36, 35, 34, 33, 32, 28, 40 mm)
Spectacle-case (Cumberlandia monodonta)
Pleurobema sp.
Fat Pocketbook (Proptera capax)
Liliput (Toxolasma parvus)

Comments:

Mud substrate @ base of drop-off

1/4 m² quadrat sample @ boat

numerous subfossil shells

29 dead whole valves

53 live

$$53 \times 4 = 212/m^2$$

11 species

Date: 8-27-87

Mussel Survey
Lock 17

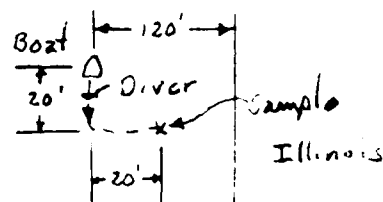
Sample Type Dive #8 Sample Location 1750' from wall
120' from shore
Species 1/4 m² quadrat sample 27' deep

Three Ridge (Amblema plicata) 1 (102 mm)
Ebony Shell (Fusconaia ebenus)
Pig Toe (F. flava)
Washboard (Megalonaias nervosa) 1 (16 mm)
Bullhead (Plethobasus cyphus)
Monkeyface (Quadrula metanevra)
Warty Back (Q. nodulata)
Pimple Back (Q. pustulosa) 2 (69, 60 mm)
Maple Leaf (Q. quadrula) 1 (66 mm)
Floater (Anodonta grandis)
Paper Pond Shell (Anodonta imbecillus) 1 (23 mm)
Rock Pocketbook (Arcidens confragosus)
W. Heel Splitter (Lasmigona complanata)
Squaw Foot (Strophitus undulatus)
Mucket (Actinonaias carinata) 1 (78 mm)
Pocketbook (Lampsilis ventricosa)
Fat Mucket (L. radiata siliquoidea)
Yellow Sandshell (L. teres)
Higgin's Eye (L. Higginsi)
Fragile Paper Shell (Leptodea fragilis) 6 (90, 89, 84, 51, 45, 39 mm)
Pink Paper Shell (L. laevissima)
Black Sand Shell (Ligumia recta)
3-Horned Warty Back (Obliquaria reflexa)
Hickory Nut (Obovaria olivaria) 2 (66, 42 mm)
Butterfly (Plagiola lineolata) 1 (77 mm)
Pink Heel Splitter (Proptera alata) 2 (87, 33 mm)
Fawn's Foot (Truncilla donaciformis) 1 (36 mm)
Deer Toe (T. truncata) 11 (54, 48, 47, 46, 39, 38, 38, 38, 34, 22, 11 mm)
Spectacle-case (Cumberlandia monodonta)
Pleurobema sp.
Fat Pocketbook (Proptera cabax)
Liliput (Toxolasma parvus)

Comments:

1/4 m² quadrat sample
sand & mud substrate

numerous subfossil shells
18 dead whole valves
30 live
30 x 4 = 120/m²
12 species



Date: 3-27-87

Mussel Survey
Lock 17

Sample Type Dive #9

Sample Location 2000' from wall - 50' from shore

Species

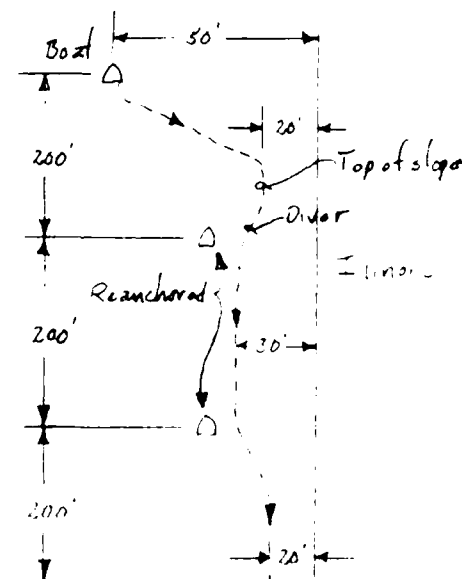
600' Drift Dive

8 deep @ boat

Three Ridge (Amblema plicata) 1 Adult & 1 small
Ebony Shell (Fusconaia ebenus)
Pig Toe (F. flava)
Washboard (Megaloniais nervosa)
Bullhead (Plethobasus cyphus)
Monkeyface (Quadrula metanevra)
Warty Back (Q. nodulata)
Pimple Back (Q. pustulosa)
Maple Leaf (Q. quadrula)
Floater (Anodonta grandis) 13 small to adult
Paper Pond Shell (Anodonta imbecillus)
Rock Pocketbook (Arcidens confragosus) 1 Adult
W. Heel Splitter (Lasmigona complanata)
Squaw Foot (Strophitus undulatus)
Mucket (Actinonaias carinata)
Pocketbook (Lampsilis ventricosa)
Fat Mucket (L. radiata siliquoidea)
Yellow Sandshell (L. teres)
Higgin's Eye (L. higginsii)
Fragile Paper Shell (Leptodea fragilis) 10 Adult
Pink Paper Shell (L. laevissima) 1 Adult
Black Sand Shell (Ligumia recta)
3-Horned Warty Back (Obliquaria reflexa) 1 Adult
Hickory Nut (Obovaria olivaria)
Butterfly (Plagiola lineolata)
Pink Heel Splitter (Proptera alata) 13 Adult
Fawn's Foot (Truncilla donaciformis)
Deer Toe (T. truncata) 1 Adult
Spectacle-case (Cumberlandia monodonta)
Pleurobema sp.
Fat Pocketbook (Proptera cavax)
Liliput (Toxolasma parvus)

Comments:

Diver followed top of drop off
Mud over rip-rap @ top
w/ all mud toward shore
Depth: 3-4' @ 20' from shore



Date: 2.9.87

Mussel Survey
Lock 19

Sample Type Dive #1

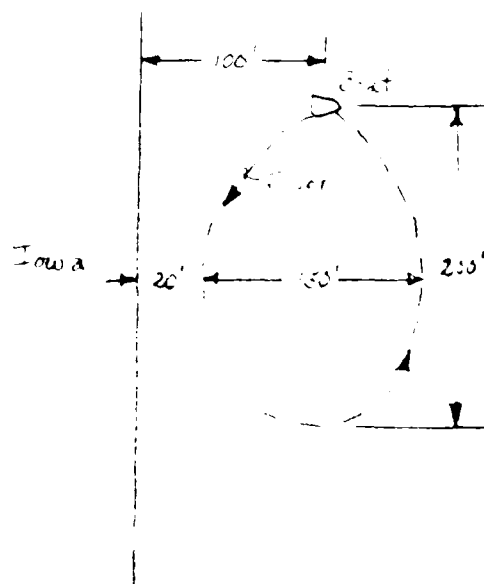
Sample Location 2000' above wall; 100' from shore
19' deep

Species

Three Ridge (Amblema plicata) 1 Adult
Ebony Shell (Fusconaia eburnus)
Pig Toe (F. flava)
Washboard (Megalonaias nervosa)
Bullhead (Plethobasus cyphus)
Monkeyface (Quadrula metanevra)
Warty Back (Q. nodulata)
Pimple Back (Q. pustulosa)
Maple Leaf (Q. quadrula)
Floater (Anodonta grandis) 1 Adult
Paper Pond Shell (Anodonta imbecillus)
Rock Pocketbook (Arcidens confragosus)
W. Heel Splitter (Lasmigona complanata)
Squaw Foot (Strophitus undulatus)
Mucket (Actinonaias carinata)
Pocketbook (Lampsilis ventricosa)
Fat Mucket (L. radiata siliquoidea)
Yellow Sandshell (L. teres)
Higgin's Eye (L. Higginsi)
Fragile Paper Shell (Leptodea fragilis) 1 small
Pink Paper Shell (L. laevissima)
Black Sand Shell (Ligumia recta)
3-Horned Warty Back (Obliquaria reflexa)
Hickory Nut (Obovaria olivaria)
Butterfly (Plagiola lineolata)
Pink Heel Splitter (Proptera alata)
Fawn's Foot (Truncilla donaciformis)
Deer Toe (T. truncata)
Spectacle-case (Cumberlandia monodonta)
Pleurobema sp.
Fat Pocketbook (Proptera capax)
Liliput (Toxolasma parvus)

Comments:

soft mud bottom @ boat
scattered rocks
light current
2-3' visibility in 19' depth; 4-5' in 8'-10' depth w/ light
Mostly rip-rap near Iowa shore
All mud toward Ill. from boat
some scattered rock from barge
inloading cann probe area (probably)



Date: 1967

Mussel Survey
Coast 19

Sample Type Dive # 2

Sample Location 2000 above water; 330' from shore
30' deep

Species

Three Ridge (Amblema plicata)
Ebony Shell (Fusconaia ebenus)
Pig Toe (F. flava)
Washboard (Megalonaias nervosa)
Bullhead (Plethobasus cyphus)
Monkeyface (Quadrula metanevra)
Warty Back (Q. nodulata)
Pimple Back (Q. pustulosa)
Maple Leaf (Q. quadrula)
Floater (Anodonta grandis)
Paper Pond Shell (Anodonta imbecillus)
Rock Pocketbook (Arcidens confragosus)
W. Heel Splitter (Lasmigona complanata)
Squaw Foot (Strophitus undulatus)
Mucket (Actinonaias carinata)
Pocketbook (Lampsilis ventricosa)
Fat Mucket (L. radiata siliquoidea)
Yellow Sandshell (L. teres)
Higgin's Eye (L. Higginsi)
Fragile Paper Shell (Leptodea fragilis)
Pink Paper Shell (L. laevissima)
Black Sand Shell (Ligumia recta)
3-Horned Warty Back (Obliquaria reflexa)
Hickory Nut (Obovaria olivaria)
Butterfly (Plagiola lineolata)
Pink Heel Splitter (Proptera alata)
Fawn's Foot (Truncilla donaciformis)
Deer Toe (T. truncata)
Spectacle-case (Cumberlandia monodonta)
Pleurobema sp.
Fat Pocketbook (Proptera capax)
Liliput (Toxolasma parvus)

See 3rd Sht of Dive # 2

Comments:

Light current
25' visibility w/ light
Pure Mud

1st Re anchor

Pure Mud

Current & Visibility same

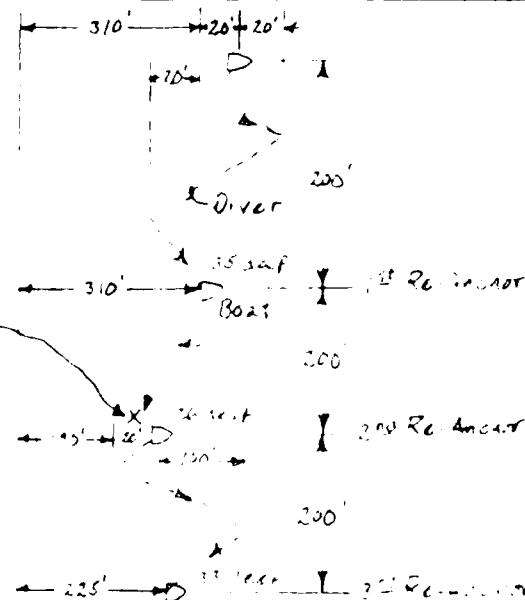
2nd Re anchor

All same

Then heavy debris w/ timbers
& scattered very large rocks

Iowa

Row of 6' high vertical
timbers in cross or along
(debris: huge rocks, cans,
bottles, 14" cannon &
scattered old shells)



Date: 9-9-87

Mussel Survey
Lock 19

Sample Type Dive #2 (cont'd) Sample Location 1400' above wa.; 225' from shore
(3rd Re-anchor) 33' deep

Species

Three Ridge (Amblema plicata)
Ebony Shell (Fusconaia ebenus)
Pig Toe (F. flava)
Washboard (Megalonaias nervosa)
Bullhead (Plethobasus cyphus)
Monkeyface (Quadrula metanevra)
Warty Back (Q. nodulata)
Pimple Back (Q. pustulosa)
Maple Leaf (Q. quadrula)
Floater (Anodonta grandis)
Paper Pond Shell (Anodonta imbecillus)
Rock Pocketbook (Arcidens confragosus)
W. Heel Splitter (Lasmigona complanata)
Squaw Foot (Strophitus undulatus)
Mucket (Actinonaias carinata)
Pocketbook (Lampsilis ventricosa)
Fat Mucket (L. radiata siliquoidea)
Yellow Sandshell (L. teres)
Higgin's Eye (L. Higginsi)
Fragile Paper Shell (Leptodea fragilis)
Pink Paper Shell (L. laevissima)
Black Sand Shell (Ligumia recta)
3-Horned Warty Back (Obliquaria reflexa)
Hickory Nut (Obovaria olivaria)
Butterfly (Plagiola lineolata)
Pink Heel Splitter (Proptera alata)
Fawn's Foot (Truncilla donaciformis)
Deer Toe (T. truncata)
Spectacle-case (Cumberlandia monodonta)
Pleurobema sp.
Fat Pocketbook (Proptera capax)
Liliput (Toxolasma parvus)

See 3rd Sh of Dive #2

Comments:

3rd Re-anchor

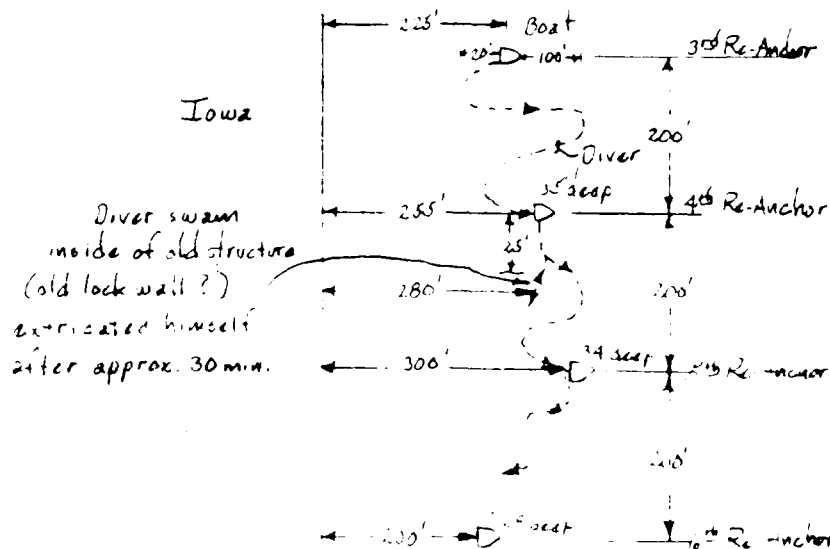
Mud w/ scattered rocks
Same current & visibility
Numerous old shells

4th Re-anchor

Mud w/ scattered rocks & shells
Same current & visibility

5th Re-anchor

Same



Date: 9-9-67

Mussel Survey
Lock 19

Sample Type Dive #2 (cont'd) Sample Location 800' above wall; 200' from shore
(6th Re-Anchor) 28' deep; in line w/ lock wall

Species

Three Ridge (Amblema plicata) 1 Adult
Ebony Shell (Fusconaia eburnus)
Pig Toe (F. flava)
Washboard (Megalonaias nervosa) 1 Adult
Bullhead (Plethobasus cyphus)
Monkeyface (Quadrula metanevra)
Warty Back (Q. nodulata)
Pimple Back (Q. pustulosa)
Maple Leaf (Q. quadrula) 1 Adult
Floater (Anodonta grandis) 2 Adult
Paper Pond Shell (Anodonta imbecillus) 1 small
Rock Pocketbook (Arcidens confragosus)
W. Heel Splitter (Lasmigona complanata)
Squaw Foot (Strophitus undulatus)
Mucket (Actinonaias carinata)
Pocketbook (Lampsilis ventricosa)
Fat Mucket (L. radiata siliquoidea)
Yellow Sandshell (L. teres)
Higgin's Eye (L. Higginsi)
Fragile Paper Shell (Leptodea fragilis) 3 Adult
Pink Paper Shell (L. laevissima) 1 Adult
Black Sand Shell (Ligumia recta)
3-Horned Warty Back (Obliquaria reflexa)
Hickory Nut (Obovaria olivaria)
Butterfly (Plagiola lineolata)
Pink Heel Splitter (Proptera alata) 2 Adult
Fawn's Foot (Truncilla donaciformis)
Deer Toe (T. truncata)
Spectacle-case (Cumberlandia monodonta)
Pleurobema sp.
Fat Pocketbook (Proptera capax)
Liliput (Toxolasma parvus)

Results of Entire Dive #2

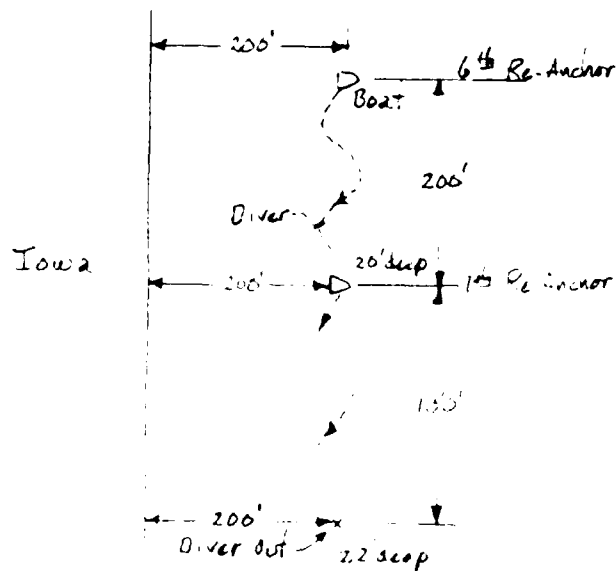
Comments:

6th Re-Anchor

Mud bottom w/ scattered rock & shells
Same current & visibility

7th Re-Anchor

Same



Date: 9-10-87

Mussel Survey
Lock 19

Sample Type Dive #3

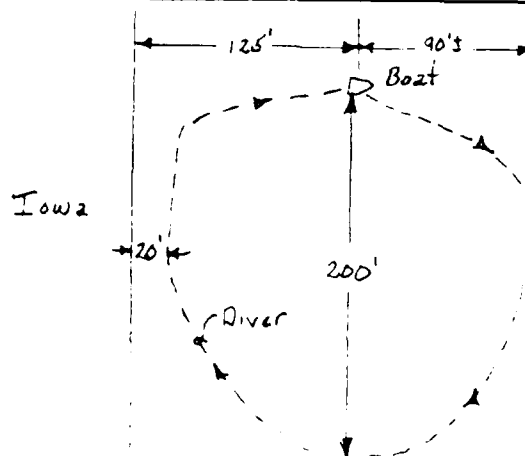
Sample Location 450' above wall; 125' from shore
15' deep

Species

Three Ridge (Amblema plicata)
Ebony Shell (Fusconaia ebenus)
Pig Toe (F. flava)
Washboard (Megaloniaias nervosa)
Bullhead (Plethobasus cyphus)
Monkeyface (Quadrula metanevra)
Warty Back (Q. nodulata)
Pimple Back (Q. pustulosa)
Maple Leaf (Q. quadrula)
Floater (Anodonta grandis) / Adult & 3 small
Paper Pond Shell (Anodonta imbecillus)
Rock Pocketbook (Arcidens confragosus)
W. Heel Splitter (Lasmigona complanata)
Squaw Foot (Strophitus undulatus)
Mucket (Actinonaias carinata)
Pocketbook (Lampsilis ventricosa)
Fat Mucket (L. radiata siliquoidea)
Yellow Sandshell (L. teres)
Higgin's Eye (L. Higginsi)
Fragile Paper Shell (Leptodea fragilis)
Pink Paper Shell (L. laevissima)
Black Sand Shell (Ligumia recta)
3-Horned Warty Back (Obliquaria reflexa)
Hickory Nut (Obovaria olivaria)
Butterfly (Plagiola lineolata)
Pink Heel Splitter (Proptera alata)
Fawn's Foot (Truncilla donaciformis)
Deer Toe (T. truncata)
Spectacle-case (Cumberlandia monodonta)
Pleurobema sp.
Fat Pocketbook (Proptera capax)
Liliput (Toxolasma parvus)

Comments:

Mud bottom
Moderate current-upstream
2-3' visibility w/ light
Depressions full of old fingernail
clam shells



Date: 9-10-87

Mussel Survey
Lock 19

Sample Type Dive #4

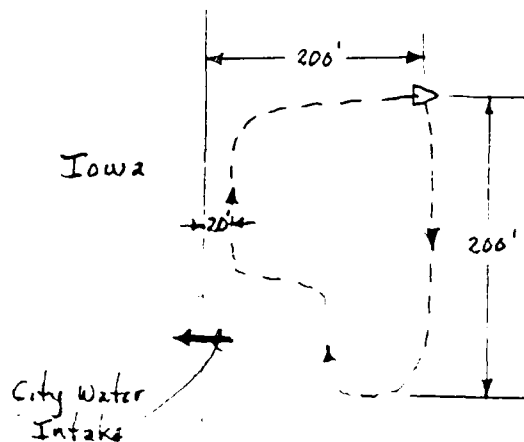
Sample Location 250' above wall; 200' from shore
17' deep

Species

Three Ridge (Amblema plicata)
Ebony Shell (Fusconaia ebenus)
Pig Toe (F. flava)
Washboard (Megaloniais nervosa)
Bullhead (Plethobasus cyphus)
Monkeyface (Quadrula metanevra)
Warty Back (Q. nodulata)
Pimple Back (Q. pustulosa)
Maple Leaf (Q. quadrula)
Floater (Anodonta grandis)
Paper Pond Shell (Anodonta imbecillus)
Rock Pocketbook (Arcidens confragosus)
W. Heel Splitter (Lasmigona complanata)
Squaw Foot (Strophitus undulatus)
Mucket (Actinonaias carinata)
Pocketbook (Lampsilis ventricosa)
Fat Mucket (L. radiata siliquoidea)
Yellow Sandshell (L. teres)
Higgin's Eye (L. Higginsi)
Fragile Paper Shell (Leptodea fragilis) 3 Adult
Pink Paper Shell (L. laevisissima)
Black Sand Shell (Ligumia recta)
3-Horned Warty Back (Obliquaria reflexa)
Hickory Nut (Obovaria olivaria)
Butterfly (Plagiola lineolata)
Pink Heel Splitter (Proptera alata)
Fawn's Foot (Truncilla donaciformis)
Deer Toe (T. truncata)
Spectacle-case (Cumberlandia monodonta)
Pleurobema sp.
Fat Pocketbook (Proptera capax)
Liliput (Toxolasma parvus)

Comments:

Mud bottom
Light Current
2-3' visibility w/ light



Date: 9-10-87

Mussel Survey
Lock 19

Sample Type Dive #5 Sample Location 1750' above wall; 120' from shore
21' deep

Species

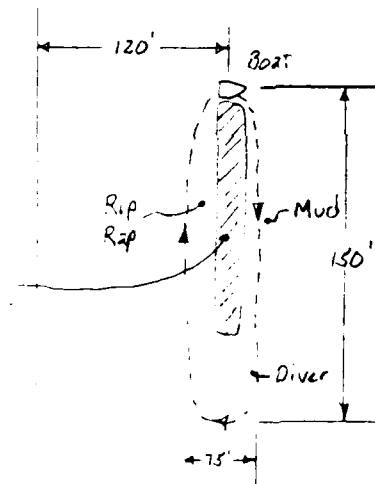
Three Ridge (Amblema plicata)
Ebony Shell (Fusconaia ebenus)
Pig Toe (F. flava)
Washboard (Megaloniais nervosa)
Bullhead (Plethobasus cyphus)
Monkeyface (Quadrula metanevra)
Warty Back (Q. nodulata)
Pimple Back (Q. pustulosa)
Maple Leaf (Q. quadrula)
Floater (Anodonta grandis)
Paper Pond Shell (Anodonta imbecillus)
Rock Pocketbook (Arcidens confragosus)
W. Heel Splitter (Lasmigona complanata)
Squaw Foot (Strophitus undulatus)
Mucket (Actinonaias carinata)
Pocketbook (Lampsilis ventricosa)
Fat Mucket (L. radiata siliquoidea)
Yellow Sandshell (L. teres)
Higgin's Eye (L. Higginsi)
Fragile Paper Shell (Leptodea fragilis)
Pink Paper Shell (L. laevisissima)
Black Sand Shell (Ligumia recta)
3-Horned Warty Back (Oblisquaria reflexa)
Hickory Nut (Obovaria olivaria)
Butterfly (Plagiola lineolata)
Pink Heel Splitter (Proptera alata)
Fawn's Foot (Truncilla donaciformis)
Deer Toe (T. truncata)
Spectacle-case (Cumberlandia monodonta)
Pleurobema sp.
Fat Pocketbook (Proptera cavax)
Liliput (Toxolasma parvus)

Nothing

Comments:

Moderate current
Scattered old shells
Mud bottom toward Illinois
2'-3' visibility w/ light

Large timber structure
125' long x 20' wide w/
upstream end @ boat
(numerous huge rocks
in & around structure)



Date: 9-10-87

Mussel Survey
Lock 19

Sample Type Dive # 6

Sample Location 1600' above wall; 50' from shore
15' deep

Species

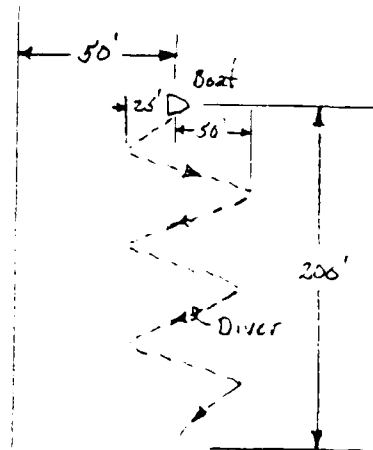
Three Ridge (Amblema plicata)
Ebony Shell (Fusconaia ebenus)
Pig Toe (F. flava)
Washboard (Megalonaias nervosa)
Bullhead (Plethobasus cyphus)
Monkeyface (Quadrula metanevra)
Warty Back (Q. nodulata)
Pimple Back (Q. pustulosa)
Maple Leaf (Q. quadrula)
Floater (Anodonta grandis)
Paper Pond Shell (Anodonta imbecillus)
Rock Pocketbook (Arcidens confragosus)
W. Heel Splitter (Lasmigona complanata)
Squaw Foot (Strophitus undulatus)
Mucket (Actinonaias carinata)
Pocketbook (Lampsilis ventricosa)
Fat Mucket (L. radiata siliquoidea)
Yellow Sandshell (L. teres)
Higgin's Eye (L. Higginsi)
Fragile Paper Shell (Leptodea fragilis)
Pink Paper Shell (L. laevissima)
Black Sand Shell (Ligumia recta)
3-Horned Warty Back (Obliquaria reflexa)
Hickory Nut (Obovaria olivaria)
Butterfly (Plagiola lineolata)
Pink Heel Splitter (Proptera alata)
Fawn's Foot (Truncilla donaciformis)
Deer Toe (T. truncata)
Spectacle-case (Cumberlandia monodonta)
Pleurobema sp.
Fat Pocketbook (Proptera cavax)
Liliput (Toxolasma parvus)

Nothing

Comments:

Rock (3" to 1' dia) w/ mud beneath
Light current
2' 3' visibility w/ light
Rock mostly clean toward Iowa

Iowa



Date: 9-10-87

Mussel Survey
Lock 19

Sample Type Dive # 7

Sample Location 1400' above wall: 75' from shore
20' deep

Species

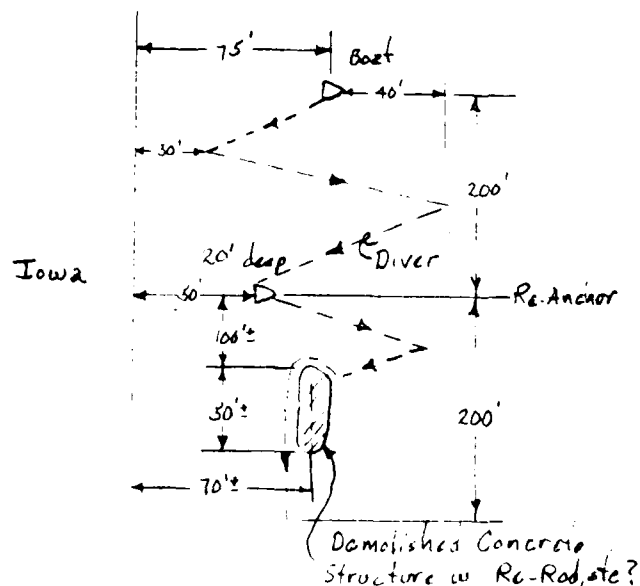
Three Ridge (Amblema plicata)
Ebony Shell (Fusconaia ebenus)
Pig Toe (F. flava)
Washboard (Megaloniais nervosa)
Bullhead (Plethobasus cyphus)
Monkeyface (Quadrula metanevra)
Warty Back (Q. nodulata)
Pimple Back (Q. pustulosa)
Maple Leaf (Q. quadrula)
Floater (Anodonta grandis) 2 Adult
Paper Pond Shell (Anodonta imbecillus)
Rock Pocketbook (Arcidens confragosus)
W. Heel Splitter (Lasmigona complanata)
Squaw Foot (Strophitus undulatus)
Mucket (Actinonaias carinata)
Pocketbook (Lampsilis ventricosa)
Fat Mucket (L. radiata siliquoidea)
Yellow Sandshell (L. teres)
Higgin's Eye (L. Higginsi)
Fragile Paper Shell (Leptodea fragilis)
Pink Paper Shell (L. laevissima)
Black Sand Shell (Ligumia recta)
3-Horned Warty Back (Obliquaria reflexa)
Hickory Nut (Obovaria olivaria)
Butterfly (Plagiola lineolata)
Pink Heel Splitter (Proptera alata) 1 Adult
Fawn's Foot (Truncilla donaciformis)
Deer Toe (T. truncata)
Spectacle-case (Cumberlandia monodonta)
Pleurobema sp.
Fat Pocketbook (Proptera cabax)
Liliput (Toxolasma parvus)

Comments:

Mud bottom

Moderate current

2'-3' visibility w/ light



Date: 9-11-87

Mussel Survey
Lock 19

Sample Type Dive # 8

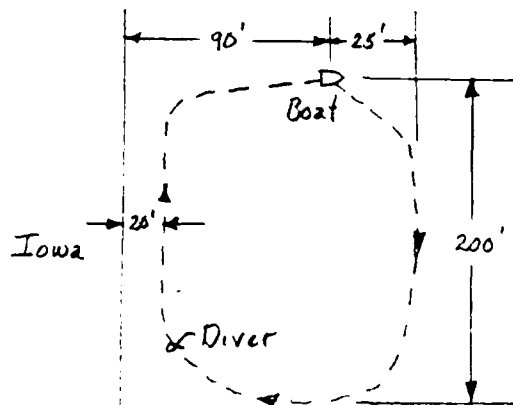
Sample Location 1000' above wall; 90' from shore
25' deep

Species

Three Ridge (Amblema plicata)
Ebony Shell (Fusconaia ebus)
Pig Toe (F. flava)
Washboard (Megaloniais nervosa)
Bullhead (Plethobasus cyphus)
Monkeyface (Quadrula metanevra)
Warty Back (Q. nodulata)
Pimple Back (Q. pustulosa)
Maple Leaf (Q. quadrula)
Floater (Anodonta grandis)
Paper Pond Shell (Anodonta imbecillus)
Rock Pocketbook (Arcidens confragosus)
W. Heel Splitter (Lasmigona complanata)
Squaw Foot (Strophitus undulatus)
Mucket (Actinonaias carinata)
Pocketbook (Lampsilis ventricosa)
Fat Mucket (L. radiata siliquoidea)
Yellow Sandshell (L. teres)
Higgin's Eye (L. Higginsi)
Fragile Paper Shell (Leptodea fragilis) / small
Pink Paper Shell (L. laevisissima) / small
Black Sand Shell (Ligumia recta)
3-Horned Warty Back (Obliquaria reflexa)
Hickory Nut (Obovaria olivaria)
Butterfly (Plagiola lineolata)
Pink Heel Splitter (Proptera alata)
Fawn's Foot (Truncilla donaciformis)
Deer Toe (T. truncata)
Spectacle-case (Cumberlandia monodonta)
Pleurobema sp.
Fat Pocketbook (Proptera capax)
Liliput (Toxolasma parvus)

Comments:

Mud bottom
Very slight current
2' 3' visibility w/ light
Rip-Rap extends 40'± from shore
20' wide beach near shore



Date: 9-11-87

Mussel Survey
Lock 19

Sample Type Dive #9

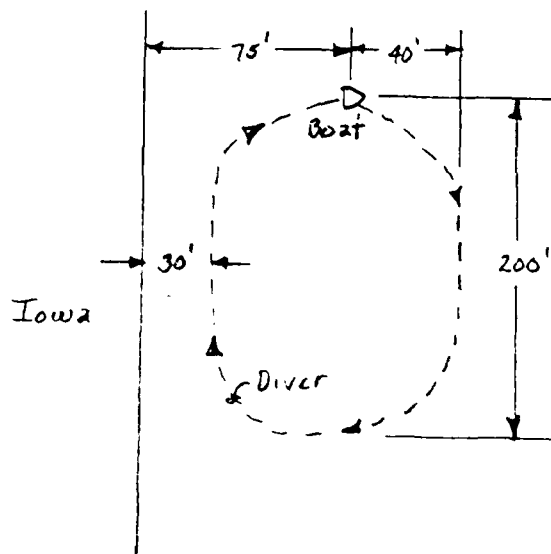
Sample Location 800' above wall; 75' from shore
16' deep

Species

Three Ridge (Amblema plicata)
Ebony Shell (Fusconaia ebenus)
Pig Toe (F. flava)
Washboard (Megaloniais nervosa)
Bullhead (Plethobasus cyphus)
Monkeyface (Quadrula metanevra)
Warty Back (Q. nodulata)
Pimple Back (Q. pustulosa)
Maple Leaf (Q. quadrula)
Floater (Anodonta grandis) 1 Adult & 1 small
Paper Pond Shell (Anodonta imbecillus)
Rock Pocketbook (Arcidens confragosus)
W. Heel Splitter (Lasmigona complanata)
Squaw Foot (Strophitus undulatus)
Mucket (Actinonaias carinata)
Pocketbook (Lampsilis ventricosa)
Fat Mucket (L. radiata siligoidea)
Yellow Sandshell (L. teres)
Higgin's Eye (L. Higginsi)
Fragile Paper Shell (Leptodea fragilis)
Pink Paper Shell (L. laevisima)
Black Sand Shell (Ligumia recta)
3-Horned Warty Back (Obliquaria reflexa)
Hickory Nut (Obovaria olivaria)
Butterfly (Plagiola lineolata)
Pink Heel Splitter (Proptera alata)
Fawn's Foot (Truncilla donaciformis)
Deer Toe (T. truncata)
Spectacle-case (Cumberlandia monodonta)
Pleurobema sp.
Fat Pocketbook (Proptera capax)
Liliput (Toxolasma parvus)

Comments:

Mud bottom
scattered dead fingernail clams
in depressions
Very slight current-upstream
2'-3' visibility w/ light
Scattered rock fragments
Rip-rap extends 30-40' from shore



Date: 9-11-87

Mussel Survey
Lock 19

Sample Type Dive = 10

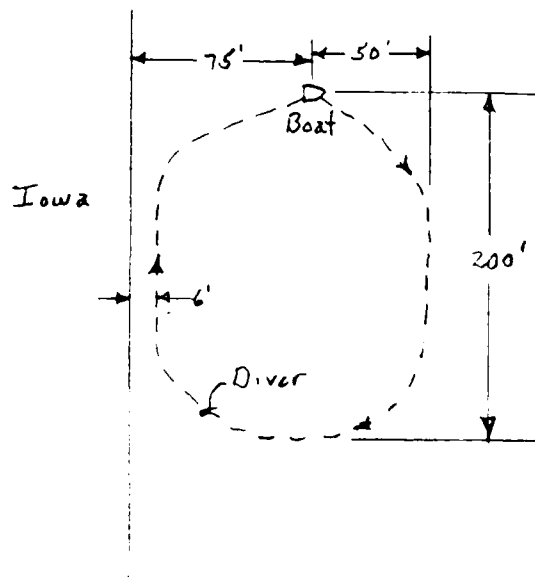
Sample Location 100' above wall; 75' from shore
14' deep

Species

Three Ridge (*Amblema plicata*)
Ebony Shell (*Fusconaia eburnus*)
Pig Toe (*F. flava*)
Washboard (*Megaloniais nervosa*)
Bullhead (*Plethobasus cyphus*)
Monkeyface (*Quadrula metanevra*)
Warty Back (*Q. nodulata*)
Pimple Back (*Q. pustulosa*)
Maple Leaf (*Q. quadrula*)
Floater (*Anodonta grandis*) 1 Adult & 3 small
Paper Pond Shell (*Anodonta imbecillus*) 3 small
Rock Pocketbook (*Arcidens confragosus*)
W. Heel Splitter (*Lasmigona complanata*)
Squaw Foot (*Strophitus undulatus*)
Mucket (*Actinonaias carinata*)
Pocketbook (*Lampsilis ventricosa*)
Fat Mucket (*L. radiata siliquoidea*)
Yellow Sandshell (*L. teres*)
Higgin's Eye (*L. Higgins*)
Fragile Paper Shell (*Leptodea fragilis*) 2 Adult
Pink Paper Shell (*L. laevis*)
Black Sand Shell (*Ligumia recta*)
3-Horned Warty Back (*Obliquaria reflexa*)
Hickory Nut (*Obovaria olivaria*)
Butterfly (*Plagiola lineolata*)
Pink Heel Splitter (*Proptera alata*)
Fawn's Foot (*Truncilla donaciformis*)
Deer Toe (*T. truncata*)
Spectacle-case (*Cumberlandia monodonta*)
Pleurobema sp.
Fat Pocketbook (*Proptera capax*)
Liliput (*Toxolasma parvus*)

Comments:

Mud bottom
Very slight current-upstream
2-3' visibility w/ light
short steep slope toward Ill. e wall
Few scattered rock fragments



Date: 9-11-87

Mussel Survey
Lock 19

Sample Type Dive # 11

Sample Location 1900' above wall; 50' from shore
12' deep

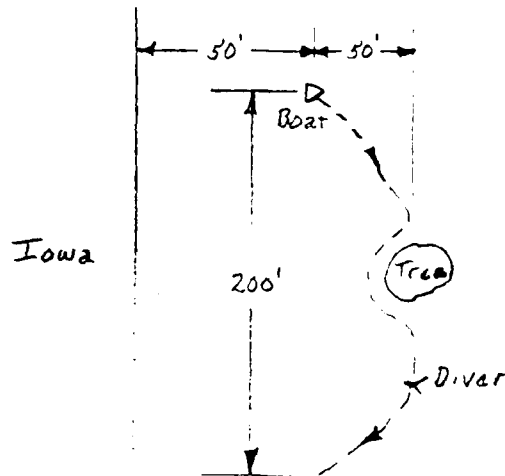
Species

Three Ridge (Amblema plicata)
Ebony Shell (Fusconaia ebenus)
Pig Toe (F. flava)
Washboard (Megalonaias nervosa)
Bullhead (Plethobasus cyphus)
Monkeyface (Quadrula metanevra)
Warty Back (Q. nodulata)
Pimple Back (Q. pustulosa)
Maple Leaf (Q. quadrula)
Floater (Anodonta grandis)
Paper Pond Shell (Anodonta imbecillus)
Rock Pocketbook (Arcidens confragosus)
W. Heel Splitter (Lasmigona complanata)
Squaw Foot (Strophitus undulatus)
Mucket (Actinonaias carinata)
Pocketbook (Lampsilis ventricosa)
Fat Mucket (L. radiata siliquoidea)
Yellow Sandshell (L. teres)
Higgin's Eye (L. Higginsi)
Fragile Paper Shell (Leptodea fragilis)
Pink Paper Shell (L. laevissima)
Black Sand Shell (Ligumia recta)
3-Horned Warty Back (Obliquaria reflexa)
Hickory Nut (Obovaria olivaria)
Butterfly (Plagiola lineolata)
Pink Heel Splitter (Proptera alata)
Fawn's Foot (Truncilla donaciformis)
Deer Toe (T. truncata)
Spectacle-case (Cumberlandia monodonta)
Pleurobema sp.
Fat Pocketbook (Proptera cavax)
Liliput (Toxolasma parvus)

Nothing - not recorded

Comments:

Rip-rap @ boat
Moderate current
3-4' visibility w/ light
Numerous scattered shell fragments
Rock over mud



END

DATE

FILMED

MARCH

1988

DTIC